

WORKBENCH

35c/SEPTEMBER-OCTOBER/1963

1 CD

Beautify
Your
Basement



Georgian Wing Chair

Shell-Plate Intarsia

Box Table

Five-Board Bench



Make Your Own Nature Tiles With Colorful Leaves, Flowers, Butterflies Permanently Preserved in Castoglas *Pours Like Honey — Sets Like Glass!*

The Pansy shown in this photograph was embedded in crystal-clear Castolite in 1946. It is as lovely now as the day we picked it in our garden. NOW—a greatly simplified method enables you to do the same with Castoglas on wood, hardboard, metal or between layers of glass mat.



How You Can Make These Tiles. The three photos below illustrate the simple casting method. Mix a small amount of Castoglas with Hardener and pour a thin layer on the wood. Then place a leaf, or any other interesting object, on this wet surface which will harden in 30 minutes at room temperature. A covering coat of Castoglas completes the process. That's

all there is to it. A hundred years from now, this leaf will be as new as... well, maybe you don't care. But you get the idea.

What You Can Do With Tiles. Use them under serving dishes, as coasters, trays, wall decorations, lamp bases, bookends. Or make a table or countertop; Castoglas is waterproof, heat- and acid-resistant and easily cleaned. Design seed mosaics or embed photographs, colorful reproductions of birds or pets, coins and stamps and other mementos of your travels—even your children's crayon drawings. There's no end to the truly distinctive accessories you can create with Castoglas.

Just A Few Notes About The Various Embedments. The brilliantly colored fall leaves, the ferns, coral bells and the chrysanthemum were gathered in our own garden. From the island of Formosa came the butterflies. The colorful prints of birds and dogs were cut from National Wildlife stationery. Embedded in Castoglas on 4 x 4 inch masonite, they look like expensive, handpainted porcelain you see in high-priced specialty shops.

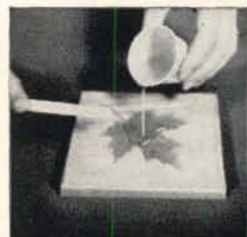
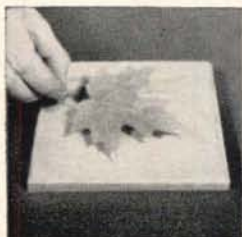
The coins were some loose change left over from a recent journey abroad. (In fact, that's all we had left!) Rice, mustard seed, barley and split peas were borrowed from the pantry to make the seed mosaics. If we weren't so modest about the whole thing, we'd come right out and tell you how impressed we are with our own handiwork. And the beauty of it is that you, too, can do all this and more, even if you have never worked with Castoglas before.

Easy To Make At Little Cost—about 20¢ for a 6 x 6 inch wood tile. As you can readily see, this is an exciting way to make wonderful gifts and to raise funds for your church or club and for yourself, too. For your copy of "How to Make and Use Nature Tiles", with complete illustrated step-by-step directions, mail 25¢ to Dept. L-9.



THE CASTOLITE COMPANY Woodstock, Illinois

The three photos directly below illustrate the basic embedding process. It's as easy as it looks.



PHIL RIZZUTO . . . Radio Network Sports caster and Former Yankee Shortstop DISCOVERS A RICHLY REWARDING NEW NATIONAL PASTIME!

"Speaking of sports, there's a new indoor pastime I'd been introduced to recently that has me wondering where it's been all my life. Until I was lucky enough to have outfitted the basement of my new home with a set of American Machine power tools, I had no idea how much fun it could be to make things out of wood—nor how easy it can really be. I'm constantly amazed with the accuracy, speed and ease with which I can now make useful and beautiful things for the house, for the kids—and for my own pleasure and convenience. I don't know how they do it, but the remarkably low cost of these professional quality tools has taken nothing away from their ability to do a job."



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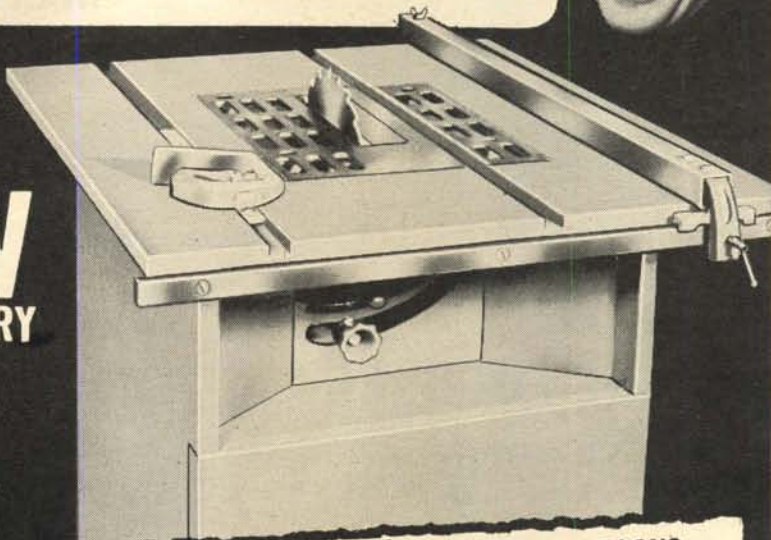
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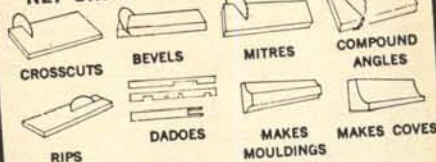
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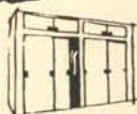
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"I had no idea . . . how easy it can really be . . . "

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WORKBENCH

volume 19 number 5

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Cover Photo: Larry Nicholson

ADVERTISING AND SALES OFFICES

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WORKBENCH is published bimonthly by Modern Handcraft, Inc., 543 Westport Road, Kansas City 11, Missouri. Second class postage paid at Kansas City, Missouri, and additional mailing offices. Thirty-five cents a copy. Annual subscription \$2 in the United States and its possessions; \$2.50 in Canada; Foreign subscriptions, \$2.50. Six weeks advance notice required for change of subscription address. Both old and new addresses must be given, and request marked for Circulation Department, WORKBENCH. Printed in the U. S. A. Copyright by Modern Handcraft, Inc., 1963. Postmaster: Send form 3579 to: Modern Handcraft, Inc., 543 Westport Rd., Kansas City 11, Mo.

Contributors should make a copy of all manuscripts submitted. Every effort will be made to return rejected manuscripts, photographs, and diagrams, if accompanied by sufficient first class postage, but WORKBENCH will not be responsible for any loss of such material.



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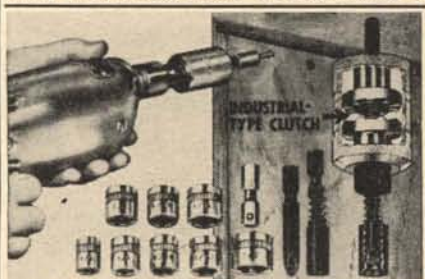


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Letters to the Editor

Dear Mr. Hedden:

I find that keeping young at 75 is no problem with a hobby I share with my wife. We make sturdy wooden toys and paint them in bright colors, then deliver them at Christmas time to the retarded children at Porterville Hospital. The smiles and tears of joy on the youngsters' faces are more than enough reward. Our only regret is that we can make only about 100 toys and there are almost 2,000 retarded children in the hospital. Mr. L. W. Lierly, Arroya Grande, California.



Dear Mr. Lierly:

You have found the finest way to stay young; making others happy. The description of your workshop shows that you have spent many hours over the years enjoying the fun and relaxation of woodworking.

Dear Mr. Hedden:

I have built several of the projects shown in the magazine where a glued-up panel is required. For faster assembly I eliminated doweling the joints, now find the joints are separating. Am I using the wrong kind of glue? C.R.L., San Francisco.

You might be able to eliminate doweling if you used an epoxy glue, which would require fast assembly as this two-part material has a short pot life, but not with standard adhesives. According to our Research Department a butt joint with standard adhesives has a strength about 25 per cent that of the wood joined. The adhesive is absorbed by the end grain, and even precoating the grain does not help appreciably. We strongly recommend that all butt joints be reinforced with dowels, splines or other devices.

Dear Mr. Hedden:

How can we find a local source for the tile described in the article "Resilient Ceramic Tile" on page 24 of the July-August issue? Would like to see some of the various colors available. C. W. Wilton, Jacksonville, Fla.

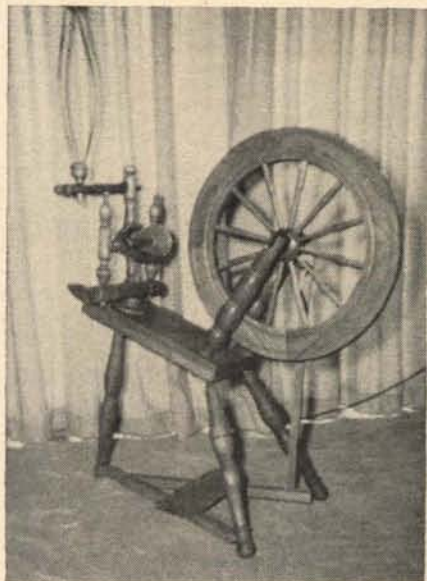
Dear Mr. Wilton:

A full-color booklet further describing the resilient tile and giving the addresses of local sources is available to WORKBENCH readers by writing to: Ceramaflex, United States Tile Co., Canton 2, Ohio.

Dear Mr. Hedden:

Thanks for the letter about my grandfather clock in the March-April issue. Am getting many nice letters from craftsmen.

Enclosed is a photo of the Spinning Wheel (Jan.-Feb., March-April issues) I made using all cherry wood and brass hardware. The diagrams were just fine. Andy Rorer, Burlington, N. C.



Dear Mr. Rorer:

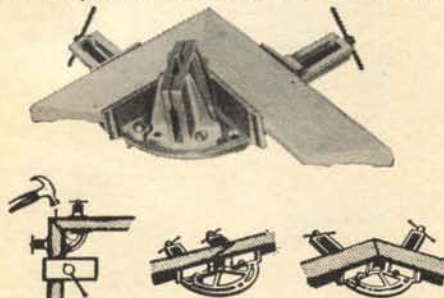
Yours is the first photo we have received of a completed spinning wheel, although we have received quite a few letters from craftsmen who are building it. Remember, readers, the wheel spindle should be 3/16 in., not the 3/32 in. as shown on the drawing.

Jay W. Hedden

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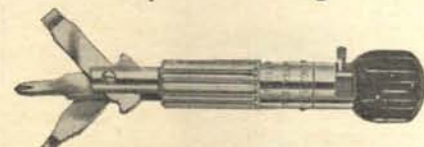
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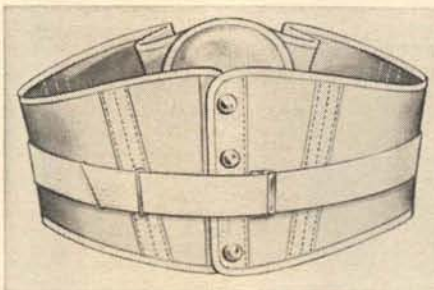
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Northel Reactivator works to keep septic tank and cesspool clean. A bacterial concentrate breaks up solids and grease—works to prevent overflow, back-up, odors. Regular use can save costly pumping or digging. Simply mix dry powder in water, flush down toilet. Non-poisonous, non-caustic. Guaranteed to reactivate septic tank, cesspool. Six months' supply (23 ozs.) only \$2.95 postpaid. Northel Distributors, WM-9, P.O. Box 1103, Minneapolis 40, Minn.



Instant Backache Relief

Pi Peer BACK-EASER® relieves back pain, slims waist, improves posture, helps relax tensed nerves. Strong, form-fitting, washable. Snap front. Encircling pull straps for easy adjustment and instant relief. Large foam rubber pad holds, massages back. Prescribed by doctors. No fitting. Be sure to send measurement in inches around hips. Only \$5.95 postpaid. Piper Brace Co., Dept. WB-93B, 811 Wyandotte, Kansas City 5, Mo.



Hepplewhite Chair Plans

For the craftsman who is interested in building the unusual, here are full-size plans for making a reproduction of a Hepplewhite chair. Plans were made directly from the original chair, built about 1790, now in a museum. Included are full instructions, sources for the special woods required. Plans show how to make chair with or without arms. Cost is \$3.00 from Hepplewhite, Dept. 1069, 543 Westport Road, Kansas City 11, Mo.

LIGHT FIXTURES with regular bulbs can be controlled from "off" through any degree of brightness to full capacity with a dial control that replaces standard switch. Plainly marked terminals assure easy wiring of encapsulated electronic circuitry. Portable version of unit will control power tools. "Dimmit" is made by Seco Electronics, Inc., 1201 S. Clover Drive, Minneapolis 20, Minn., is priced at \$15.95. State whether for switch or tools.



PLASTIC STORAGE RACK holds six 4 1/2-oz. baby-food jars that can be used for nuts, bolts, other small items. Jars slip in and out of rack easily, yet are held firmly. Glass containers permit selecting items at a glance. At most hobby shops or can be purchased direct from Consolidated Models, Inc., P. O. Box 336, Route 130, Cranbury, N. J. Racks are \$1.50 each, two for \$2.79, plus 25 cents postage. Glass jars are included.



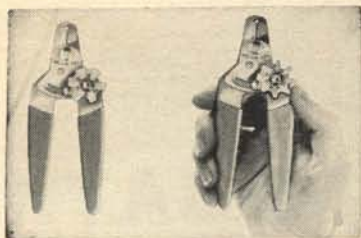
HEAVY-DUTY VISE for home workshops has jaws 4 in. wide, opens to 4 in. Grips cast in both jaws hold 1/8 to 1 1/4-in. pipe. Jaw faces are replaceable, there is large anvil horn, swivel base has positive lock. Vise screw is cold-forged steel, handle-end knobs are forged from same stock as steel handles. Style O4 vise weighs 13 1/2 lbs. For details write Columbian Vise Co., Cleveland 4, Ohio, ask for Bulletin L-8691A.



IF THERE ARE any amateur sculptors in the family Dad will be happy to hear the news that carbide-tipped sculpturing tools now are available. They require a lot less sharpening, as the carbide increases wear life of the tools by 10 or 20 times as compared to tool-steel items. Carmet Div. of Allegheny Ludlum Steel furnishes the carbide for the chisels sold by Sculpture House, National Arts Bldg., 38 E. 30th St., New York 16.



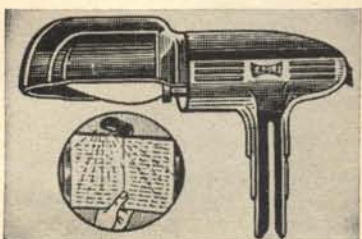
Showcase



ADJUSTABLE WIRE STRIPPER is available in two sizes; No. 227 strips 10 to 20-ga. wire, No. 228 strips 12 to 26-ga. wire. Latter unit is for electronic work. Adjustment is made by dialing with thumb. Narrow nose of the tool permits it to be inserted in junction boxes, other close-quarter situations. Price of either unit is \$1.75. Made by Holub Industries, Sycamore, Ill. Available at hardware stores or electronic suppliers.



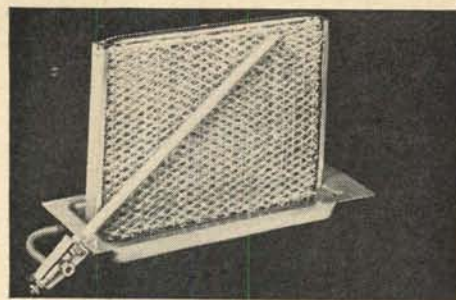
BOTH HAMMER-IN and powder actuated fastening tools are shown, described and prices and weights given in a 12-page booklet available free from Ramset, Winchester-Western Div., New Haven 4, Conn. Ask for price catalog Form PL-200. Powder-actuated tools are mostly for use of plumbers, electricians and other mechanics, but hammer-type tools are ideal for home craftsman to fasten items to thin steel or concrete.



CLIP-ON LIGHT fits over book, automatically turns off when book is lowered. All-plastic fixture is lightweight, easily cleaned, has 8-ft. length of cord. Pastel-color unit is white enamel inside to concentrate light on book, so others are not disturbed. Fine for reading in bed; when you doze off and drop book, light turns off. Picking up the book turns on the light. Exceptional buy at the modest cost of \$2.98 from Riteway, Hewlett, N. Y.

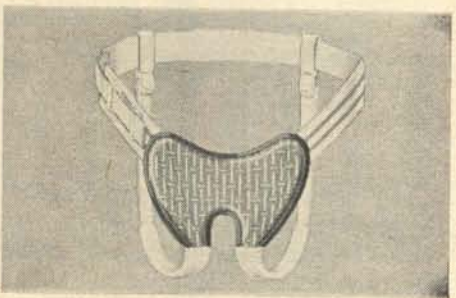


THERE ARE 80 homes, and variations of some of the designs, illustrated in this new 46-page book, including A-frame cabins, traditional chalets, contemporary cottages, luxury lodges, rustic chapels, even a village store and post office of A-frame construction. Blueprints and complete lists of material are available for all plans shown. "80 Holiday Homes" is \$1.50 from Home Building Plan Service, 2454 N. E. Sandy Blvd., Portland, Ore.



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HUMIDI-MAKER installs in heating ducts for whole-house comfort, evaporates up to 10 gal. daily. Simple, trouble-free operation, long-life, non-corrosive construction. No possible water damage to furnace. Everything included for quick, easy installation, no electrical connections necessary. Special pre-season price only \$25.95 ppd. Send for free details, or order today. Satisfaction guaranteed or money back. Banson Products, P. O. Box 9245, Prairie Village, Kans.



New-Life Elastic Truss

Balanced support for single or double reducible inguinal hernia. Dropped front design keeps broad, flat foam rubber pad low and in place. Pad can't slip. High-grade surgical elastic body band expands and contracts with body movement. No fitting. Padded, adjustable leg straps. Washable. Just \$7.95 ppd. Send hip measure. Satisfaction guaranteed or money back if returned postpaid within 30 days. Kinlen Co., Dept. WB-93P, 811 Wyandotte, Kansas City 5, Mo.



Original Designs

Variety and interest are the keys to America's most popular needlework magazine, *The Workbasket*. Every month you'll have original tatting, knitting, and crocheting designs right at your fingertips. You'll also find information on embroidery and needlepoint plus gardening tips and mouth-watering recipes. Four times a year receive hot iron transfers FREE. Send only \$1.00 for 12 issues to the *Workbasket*, Dept. 1041, 543 Westport Rd., Kansas City 11, Mo.



Build This Baritone Ukulele

This baritone ukulele is tuned and played like the first four strings of the guitar. A rich, mellow tone, from an instrument only slightly larger than the standard ukulele. An exciting project for the do-it-yourselfer. Sounds more like a guitar than a ukulele. Full size plans include detailed instructions, construction tips, sources for special woods and materials. Plans are just \$2.00 from: Ukulele, Workbench, Dept. 1075, 543 Westport Rd., Kansas City 11, Mo.



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Stop embarrassment of wet garments and bedding. Male-Dri, the day-and-night support, gives constant protection and confidence. Elastic belt, wet-proof pouch. Quilted absorbent reusable cotton pads snap in, removes for laundering. Ideal in post-operative cases for this condition. Patent pending. \$5.95 ppd. with 3 pads. Boy's sizes available, too. Send measure around lower abdomen. Piper Brace Co., Dept. WB-93M, 811 Wyandotte, Kansas City, Mo.

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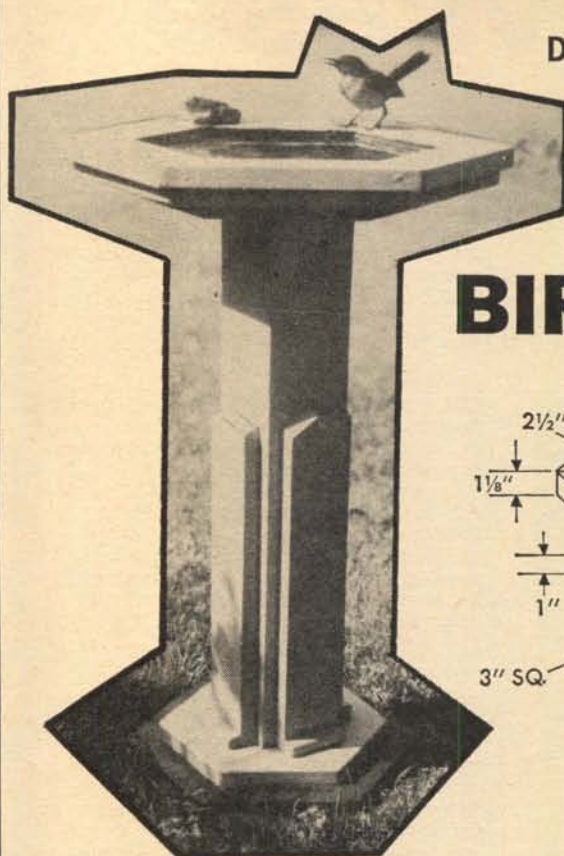
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2729 S. Mary Street, Chicago 8, Illinois

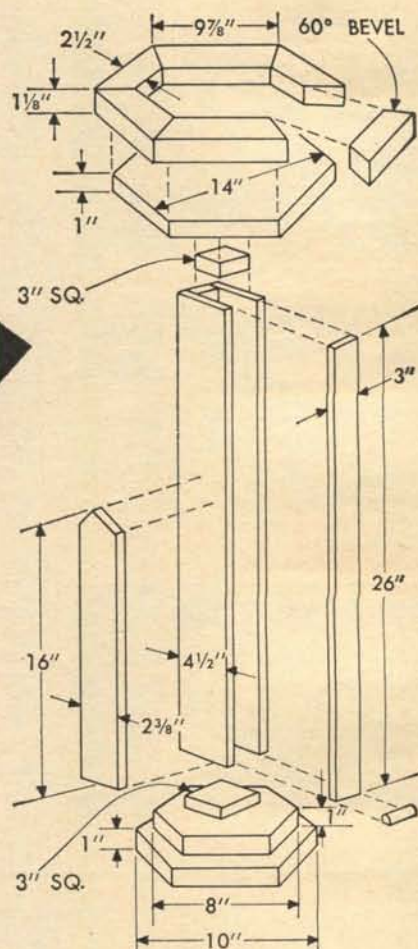
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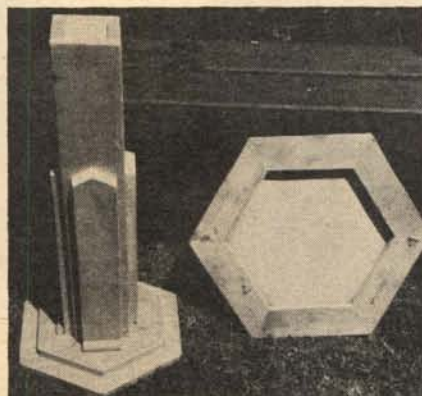
BIRDBATH



You invite birds to your yard to have a bath or drink with this birdbath.

During the dry days of late summer and early fall wild birds have a problem finding water for drinking and bathing. Build this attractive birdbath and "invite" them to your yard. They will more than repay you with song and with their amusing antics.

Either 3/4-in. exterior plywood or 1-in. lumber can be used for the birdbath. The top, or bowl, consists of six sections glued and nailed to a base piece. The base of the unit is constructed in a similar



Completed birdbath, with top removed, is shown here before being painted.

manner, as can be seen in the drawing. The column is hollow, which permits the blocks on the upper surface of the base, and the lower surface of the bowl, to fit inside. This makes for easy disassembly for cleaning and painting, and for storage during the winter months.

To waterproof the bowl you can use asphaltum varnish. Two coats should be used. As an alternative, apply a heavy coat of auto-body plastic. The plastic is compounded from an epoxy, and it will adhere firmly to the wood, as well as making it waterproof. It can be sanded to make it smooth and easy to clean. △ △

REDWOOD CONTEST
Simpson Timber Co.,
2042C Washington Bldg.,
Seattle 1, Wash.

Do-it-yourselfers who like to build with wood now have an opportunity to win cash for their design talents. \$1,000 will be awarded for the most distinctive use of redwood as a contribution for better living. The award is not contingent on the amount of redwood used. Contest closes September 30. For contest rules and free 32-page Idea Book send to the address above.

Aluminum Co. of America,
601 Alcoa Bldg.,
Pittsburgh 19, Pa. Free.

This interesting booklet shows and describes how good design in remodeling can greatly increase the value of a home, give it a modern appearance and provide added living space. If you are looking for remodeling ideas, we suggest you write for it. Might give you some ideas of how an older home that can be purchased at reasonable cost could be up-dated to give you more house for your dollar.

Franklin H. Gottshall
Bruce Publishing Co., 400 N.
Broadway, Milwaukee 1, Wis.
Price: \$3.50

Each of the several books we have read on the subject of woodcarving varies in the overall approach to the art, and the styling of the carvings are different. In this volume the instructions are specific enough for the beginner, yet general enough for the advanced craftsman. The styling of the figures, although taken from past periods, is more modern than some we have seen, but with a touch of the period from which they came. An excellent book for any woodcarver to have in his library, whether he is a beginner or a long-time enthusiast.

Magnetic Tape Div., Sarkes Tarzian, Inc., Bloomington, Ill.
Single copies free. Copies also free in quantity for schools, tape-recorder clubs, other groups.

Contained in this 32-page booklet are ideas and tips of interest to the experienced tape recorder, as well as the first-time novice. Subjects range from proper selection of tape for various purposes and types of records to a discussion of recorder uses. Also included is handy table of recording time for various type and lengths of

magnetic tape, and a set of simple but effective magnetic-tape quality tests.

Douglas Fir Plywood Assoc.,
Tacoma 2, Washington. 25 cents.

Worth much more than the nominal price asked, this booklet describes how to add a room to any style house, and

do it correctly. In the 32 pages are architects' drawings and floor plans that show how to add a room to any house so it looks as though it has always been there. Included also are tips on where to get the best financing, how to choose a home modernizer—staying away from the “fast-buck boys”—, tips on heating and decorating, and how a home owner can save by doing part of the work himself.

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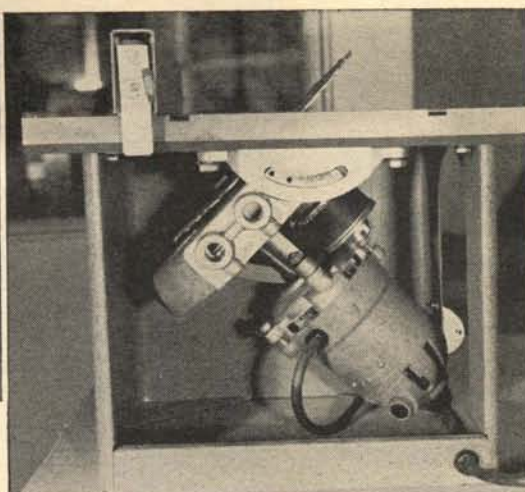
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"Motorized"

Power Tools

Our Shop-Tested Seal this issue goes to the Toolkraft MoterTools line that consists of the Model 815A 8-in. table saw, the Model 645A 4½-in. jointer and the Model 250 Shaper. Each of these tools is complete with its own motor. The tilting-arbor saw will cut over 1¾ in. deep when angled at a full 45 deg., and is the only stationary tool of this type we have ever tested that has a "clutch". When you jam the blade — difficult to do — the clutch slips so the blade stands still and the motor keeps running at full speed. This feature assures no kick-back of stock. As with other table saws we have tested, we recommend the table extensions, available as optional equipment.

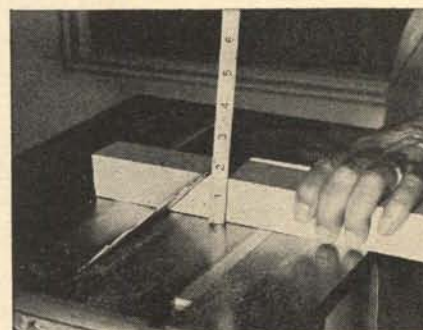


Lock and release for tilting mechanism is located conveniently at rear of table. This shot shows saw tilted at 45 deg.; note that motor tilts with blade, eliminating any problem of twisting belt.

The jointer we found fascinating. We cranked in the full ¾-in. depth of cut and ran both soft and hardwoods over the blades. There was no slowing or stalling and the cut was smooth and clean. A feature of this tool we found excellent is the special linkage that keeps the edge of the infeed table parallel to the circumference of the cutter head. This eliminates the problem that occurs with other jointer-planer units where the gap between the blades and infeed table increases as the table is lowered.

The Toolkraft jointer spins at 18,000 r.p.m. which assures a smooth cut even on the edge of plywood. Under load the manufacturer claims that the speed never drops below 14,000 r.p.m. We had no tachometer, but the cuts were all smooth on all shapes and stock.

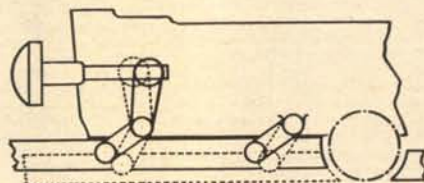
For more information: Toolkraft, Box 157, Springfield, Mass. △ △



8-in. blade cuts over 1¾ in. stock when adjusted to full 45-deg. angle. ¾-H.P. motor provides plenty of power.



Belt on jointer-planer (and other "MoterTools"), has "cleats", pulleys are notched to match.



Unique parallel linkage keeps infeed table parallel to surface of cutter head, prevents gouging and splintering.



Here out-bevel is cut. In any position the tool cut smoothly, motor never slowed or seemed to be strained.



Fence on jointer-planer tilts both ways, and adjusts across tables to permit cutting accurate rabbets.

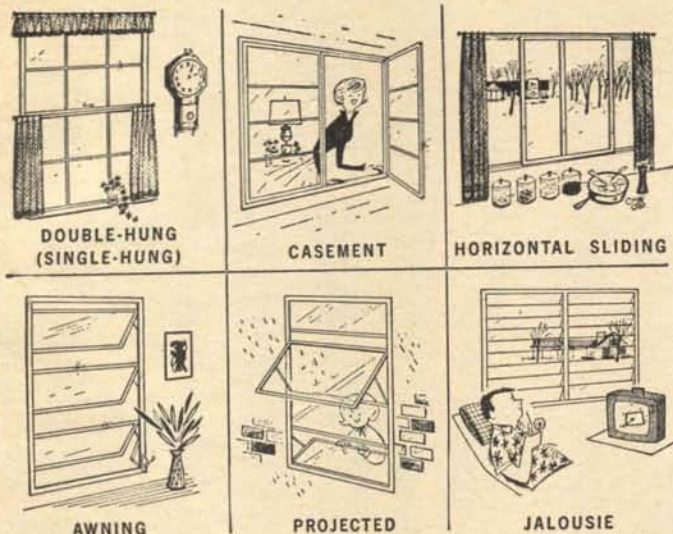


Jointer-planer was set for full ¾-in. cut, stock run through quickly. Motor speed did not slow enough to notice.



Shaper has speed of 18,000 r.p.m., never slows below 14,000 r.p.m. under load. Even shapes plywood smoothly.

The "Language" Of Windows



Windows are an important, and often overlooked, part of home selection. Unlike many features that can be changed easily later on, windows are a part of the basic structure and changing them is a major project. Today, with architects, designers and decorators using windows to give houses a new sense of design and openness, attention to proper selection and placement assumes increasing importance. Also, reports the Architectural Aluminum Manufacturers' Association,

aluminum windows are available in more basic designs than ever before. The following AAMA "window glossary" describes the most popular types:

Double-hung and single-hung are the most familiar types. They have an upper and lower sash; in double-hung units each sash slides past the other. Only the bottom sash moves in single-hung units.

Horizontal-sliding windows have movable sashes that slide from side to side. Originally designed for modern ranch-style homes they are the most popular of aluminum window, now are used in almost every type home.

Jalousie, or louvered, units first were introduced in warmer climates, now are used in most areas of the country. They are somewhat like venetian blinds, having glass louvers 4 to 6 in. wide that open outward by means of an operating mechanism.

Casement windows have movable ventilators hinged to the frame at either side. Originally they were associated with Gothic or English Tudor architecture, but now are used extensively in contemporary-design homes.

Awning windows have a series of ventilating sections that swing outward from the bottom. All sections close simultaneously in awning units, although some have a delayed action so the bottom unit will open part way before the others move.

Projected windows have movable ventilators that project inward or outward in a horizontal plane. First used in schools, hospitals and commercial structures they now are popular for apartments and single-family homes. △ △

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18. Workbench—toolrack



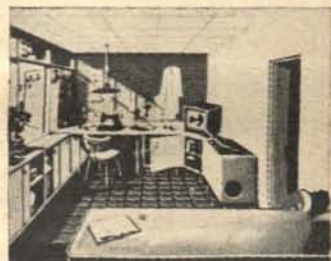
19. Entertainment center with room divider



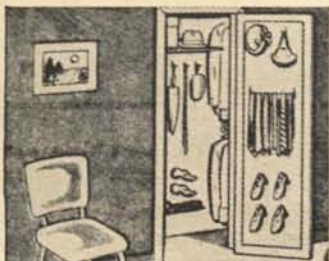
13. Tubinette and water heater cabinet



14. Portable, knockdown ice fishing shelter



15. Enclosed porch



21. Peg-Board closet



9. Children's playhouse



34. Linen closet with slide-out drawers

Masonite Corporation, Dept. WK-9, Box 777, Chicago 90, Illinois
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Shell-Plate Intarsia

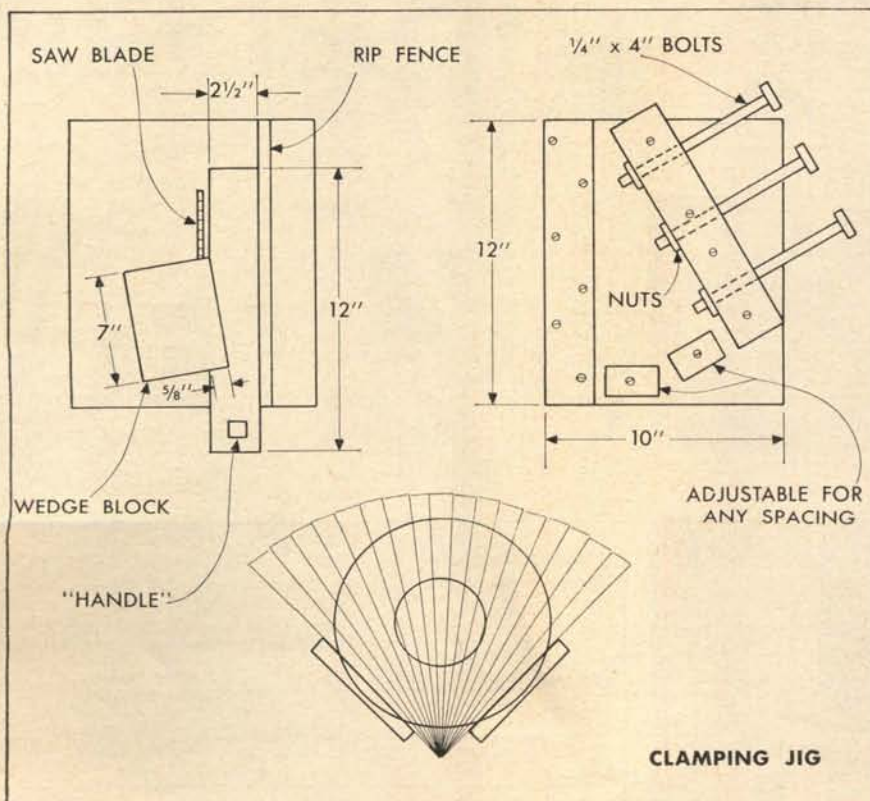
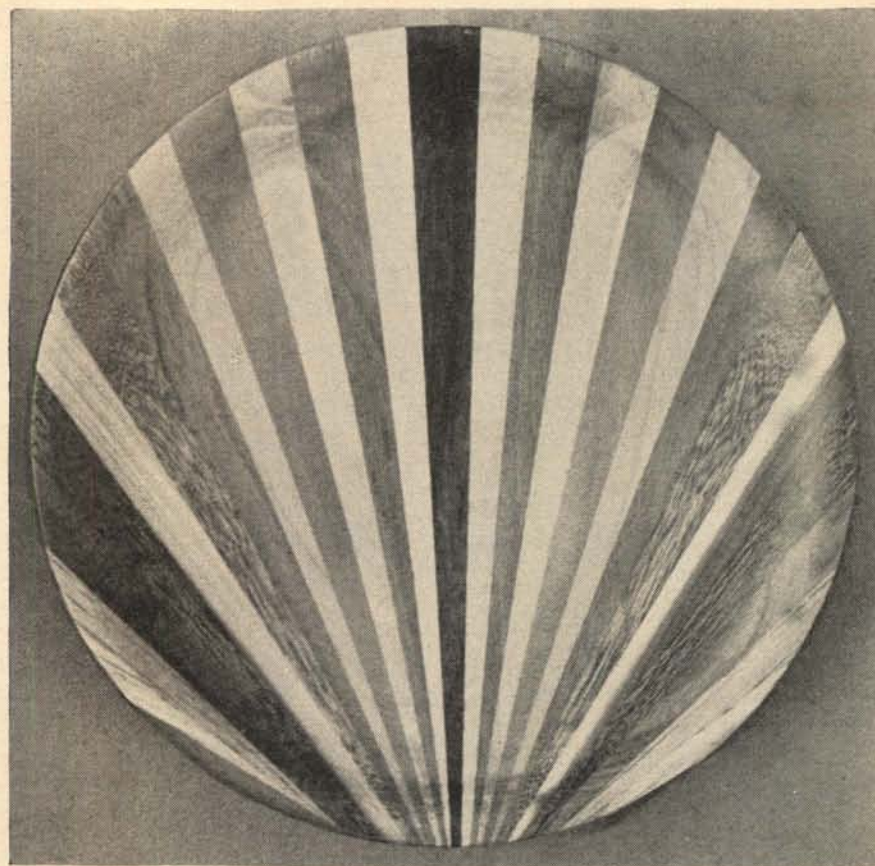
CLAUDE MOWRY

While the attractive shell plate in the photo appears to have a true shell-shape, it actually is round, having been turned on a lathe. The effect is produced by gluing-up a number of wedge-shape pieces of different-color woods. According to Webster's International Dictionary Intarsia means: "a kind of decoration in woodwork, much employed in Italy in the 15th century and later, in which scrolls, arabesques, architectural scenes, fruits, flowers, etc. were produced by inlaying wood in a background

of wood". Our shell plate is just one example of the modern use of intarsia, using a number of wedges. In combination with the wedges you

can use squares, rectangles, even letters and numbers. The glued-up assembly is turned on a lathe to produce a smooth-surfaced, accurately-round item.

First step is to make a wedge-cutting jig as indicated. A number of such jigs, with wedge lengths ranging from 2 to 9 in. should be made. Smaller wedges will have bases narrower than $\frac{5}{8}$ in., the longer wedges have bases $\frac{3}{4}$ in. wide. Use care when using the jig on a table saw, keeping your fingers clear. On a radial-arm saw the jig is made shorter and tacked or clamped to the table. Use a hollow-ground or miter blade that cuts smoothly enough to eliminate the need for jointing or planing the edges of the wedges. Glue 5 wedges together at a time, using a clamping device as shown. When you have several of these "pentads" assemble them in a larger clamping jig and glue them together. All plates will have an odd number of wedges, the center wedge being the starting point. The outer strips need not be wedges, but can be rectangles, as indicated. Bandsaw the plate to rough shape, then mark the circle for the outside of the plate, and a circle to indicate the location of a wooden disk that is glued to the back of the plate and screwed to the faceplate of the lathe. $\triangle \triangle$





MURAL PANELS

When you remodel your bathroom here is an item that will not only simplify and speed up the job, but will add an unusual touch of beauty. The product is a series of wall panels 5 ft. wide, available in

heights of 5 or 6 ft. The panels are one piece, and no division moldings are required. This reduces maintenance and minimizes water leakage into the wall. The surface of the panels is baked plastic that is

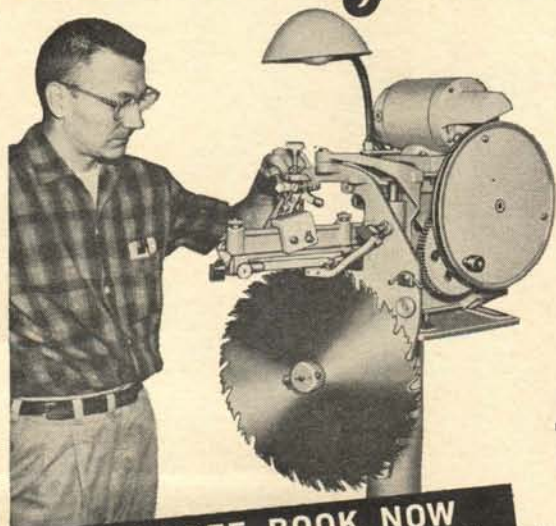
resistant to heat, moisture, grease and stains. There are nine different murals, all are gold processed on a white background. Cleaning requires only a damp cloth.

Included in the mural patterns are South Pacific (shown), Aquatic, Seascape, Desert, Fleur-De-Lis, Rangoon, Oriental, Catalina and Snowflake designs. Matching end panels in plain white are available to permit completely decorating a bathtub recess. When necessary, the panels can be cut and trimmed with regular woodworking tools.

Because of the wide variety of patterns available, the murals also can be used to add a pictorial accent to any room in the home. A mural would look fine in a basement recreation room, and could be used to set the motif of the styling to be used in that room.

For more complete information on the wall murals write to: Marsh Wall Products, Dover, Ohio. Δ Δ

For Sparetime or Full Time Income, There's Good Money In Sharpening



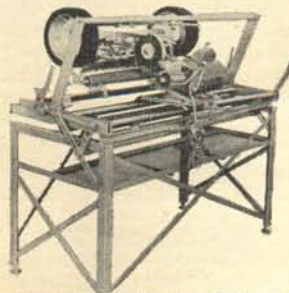
Here's a proven practical way to earn extra dollars in spare time — to develop a money-making repair business of your own. Investment is small. There's no overhead, no stock of goods to carry. No experience needed, no canvassing. You do it with the famous Foley Saw Filer that automatically sharpens all kinds of saws — and the Modern Lawn Mower Sharpener that precision sharpens all types of mowers.

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FOLEY MFG. CO. 940-3 Foley Bldg., Minneapolis 18, Minn.

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In this series on basement remodeling we started with a cluttered, hole-in-the-ground sort of basement that seemed to have no use except for the storage of anything that would go through the door. Fig. 1 shows just one corner, but it is typical of all the basement. In contrast is our cover and lead photo; it's the same corner "after".

It is a major project to "Beautify Your Basement", so a plan and schedule are necessary. First, schedule just one room or area at a time, rather than doing the whole basement at once. With such a schedule you can budget your time and money, and will have a "finished product" in a fairly short time.

Next, carefully measure your basement and draw a scale plan as we did, Fig. 9, indicating the location of every fixed item. Over this plan was taped a sheet of tissue paper. On the tissue we indicated the laundry room, workshop, recreation room, and a retreat for Dad. The latter is a den-office, (our cover), where the head of the house can have real privacy, (a rare luxury in this day and age), to read, write, pursue hobbies from model building to the assembling of electronic kits. Such a room would be fine for Mom, too. On the plan are shown areas for storage. An above-ground back-yard pool requires a dressing room, and that is noted as a future area. The window will be

made into a door and a stairway installed.

Keep the plan flexible; there may be changes required. A teen-age son in this family got his "novice" radio license and requested space for a "ham" shack. The den-office had been started, so we scheduled the ham shack next, with the enthusiastic aid of the teen-ager.

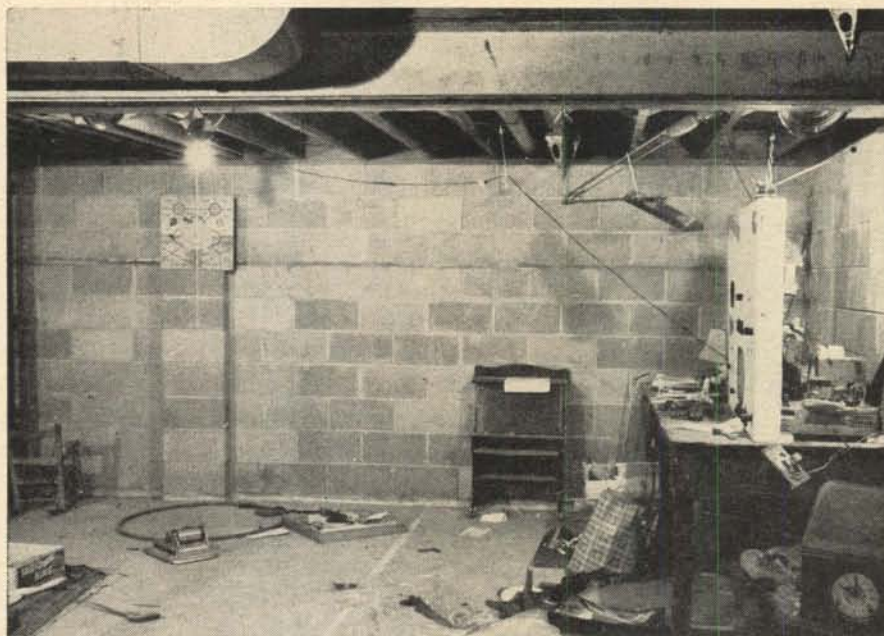
It will be noted in Fig. 9 that the location of the shack required a short hallway between it and the den-office. We checked this out on our tissue-paper overlay, and drew it full size on the basement floor with chalk. The hallway provides some sound control, along with a reasonably soundproof wall, between the den and shack. The wall

1. Typically "basement", this cluttered corner became attractive den-office. Table is crude "ham" shack for son.

has 5/8-in. plasterboard on each side of 2 x 4 studs, plus acoustic tile on the ham-shack side.

We started the remodeling by cleaning the basement and discarding as much of the collected junk as the family would allow. The rest we stacked in the areas that were planned for storage. Sealing the walls against water leakage was the next step. (We had occasional leaks in the corners during heavy rains.) Figs. 2, 3, and 4 show the application of a waterproofing compound called Aqua-Shield. The two-part solution is white, but tubes of color, Fig. 3, are available if the painted surface is to be used as the finished wall. Two coats of the water-proofer are required, so we used color only in the second coat. The contrast in color made it easy to be sure that every square inch received the second coat.

About a week after the waterproofing was applied we noted dark-colored blisters in one corner. This was a result of "efflorescence" caused by earlier leaks. The alkali salts in the blocks and mortar were "bleeding" through and lifting the waterproofer. Our solution was to chip away the blisters, removing all loose waterproofer. A wire brush then removed all powdered residue, Fig. 5. A dilute solution of muriatic acid then was applied, Fig. 6, as per instructions with the waterproofer. After the acid had been on the wall 30 min. the wall was flushed thoroughly, Fig. 7. After the wall had dried a couple of days fresh Aqua-Shield was applied. We



waited until after several heavy rains to make sure all the efflorescence had been removed, Fig. 8. There have been no signs of leakage in almost two years.

New products are constantly being developed in this Space Age, and another excellent product for waterproofing, called Epoxite, Fig. 10, was tested and described on page 59 of the July-August issue.

If any of your floors are squeaking or flexing, now is the time to check the bridging in the floor joists. Renail any that have come loose, install bridging where there is not enough. Snap-in metal bridging, Fig. 11, is a real timesaver.

Before beginning construction of partitions consider the possible need for adding windows to provide light for certain areas, and whether a door to the outside, (if your base-



2. Waterproofer for basement walls is two-part mix; fine cement powder is mixed with silicone-latex liquid.



3. Tubes of color permit making waterproofer a decorating medium if walls are not to be paneled or otherwise covered. We used it in second coat.



4. Wide brush is used to apply heavy material, force into surface of blocks.



5. When efflorescence showed, we chipped off spots of coating, wire-brushed surface to remove residue.



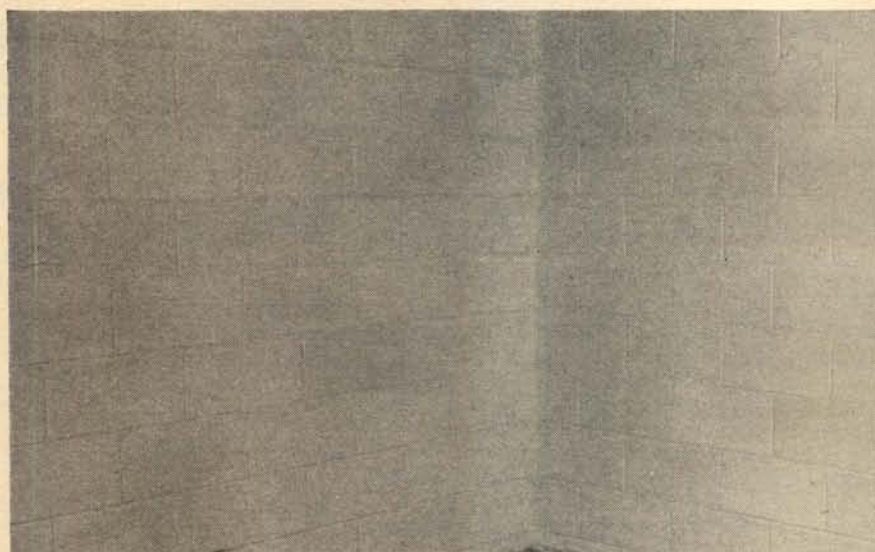
6. Diluted hydrochloric acid was brushed on cleaned areas where efflorescence showed, allowed to soak.



7. Treated spots were flushed thoroughly with water to remove all residue from acid-alkali reaction.

ment has none), would be an advantage. Rows of small windows, even "picture" windows can be installed in basement walls. The floor must be shored up, the wall removed, the earth excavated, then a steel or wood beam installed to support the house above the window. The Bilco Co. has an excellent booklet describing basement window and door installation that will be sent to WORKBENCH readers on request. Their address, as well as those of other companies participating in the basement-remodeling project are listed at the end of this article.

The next step in our project was to nail up 1 x 2 furring strips for the ceiling tile, spacing them 12 in. apart, Fig. 12. For just a few dollars a hundred running feet we purchased several hundred feet of furring strips. In each 100 ft. there



8. Flushed areas on wall were allowed to dry thoroughly, then given two fresh coats of waterproofer. After several heavy rains, wall was okayed.

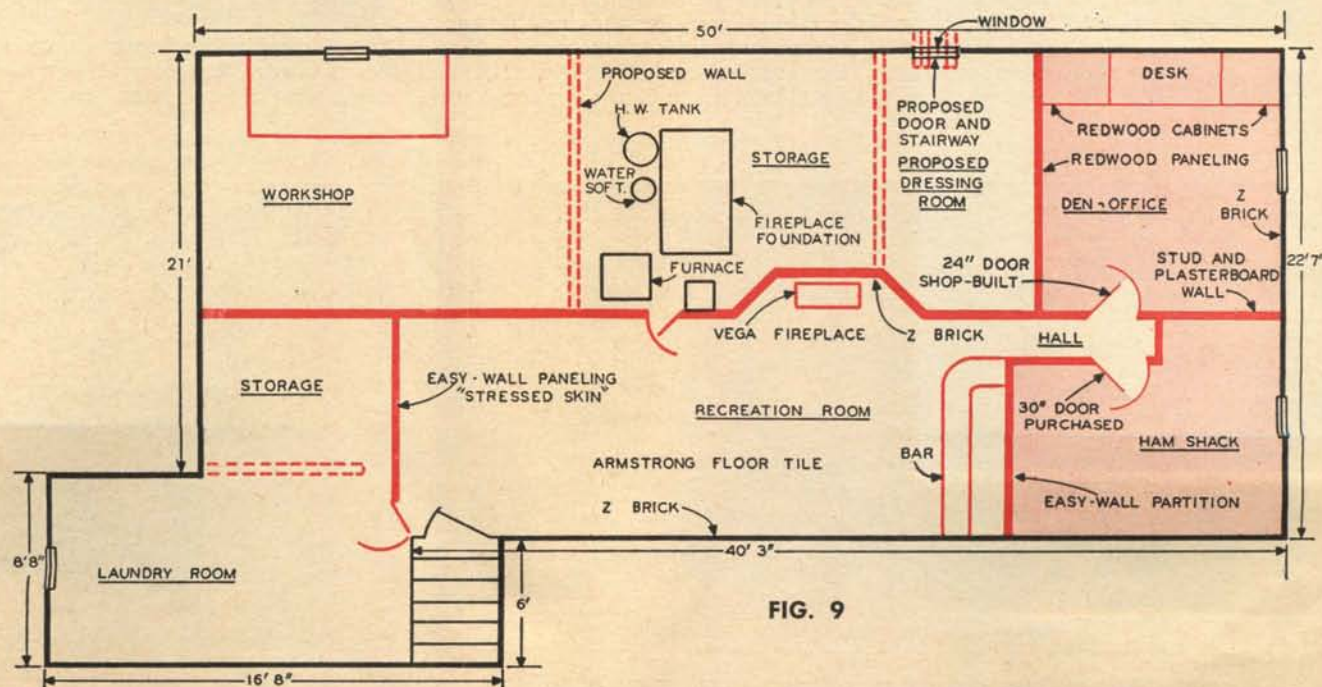


FIG. 9



10. Now on market is epoxy material, (July-Aug. issue, page 59).



11. If any of the floor joists are flexing, causing squeaking floors, now is time to install bridging, such as Curtis metal unit.



12. Simple jig nailed together from scraps speeds job of spacing and nailing furring strips to floor joists.



13. Neck-cracking job of fastening ceiling tiles with staple gun goes faster if you have long-armed son available.

were perhaps 15 or 20 ft. of stock that was reasonably clear and straight-grained. These pieces were put aside and used for cabinet construction, (described in another article in this series), and for framing-in heating ducts, pipes and the like, Fig. 14. No dimensions or details of the framing are given, as every situation will be different. We did find the easiest method was to nail lengths of 1 x 2 vertically to the joists, then join the lower ends with crosspieces. Make sure that such framing is of dimensions



14. Lengths of 1 x 2 were nailed to joists, other lengths nailed to ends to box-in heat ducts, etc.



15. T-shape metal "furring strips" are suspended by wires in this new method of ceiling installation with large panels.



16. Ceiling is completed by dropping large-size panels down into grid formed by T-shape channels, as here.

that require no less than a 2-in. width of ceiling tile when more than one width is required. This avoids the problem—and poor appearance—that results when you must handle a narrow strip of tile that will break easily and is difficult to staple or nail.

Installing the tile with a staple gun is fast and easy, Fig. 13. An acoustic-tile ceiling is a must in a basement to provide the necessary sound conditioning. Its light color also helps illumination. In Figs. 15, 16 and 17 is shown a new type of

17. Sound conditioning, fire safety are combined with beauty in this ceiling. Illumination panels also can be used.



suspended ceiling in which larger-size acoustic tiles are fitted. This ceiling can be used in a basement, as well as in an upstairs room where a dropped ceiling is required. One of the advantages of the ceiling, by the Armstrong Cork Co., is that the tiles lift out readily to permit reaching valves, pipes, wiring, etc. Translucent fiberglass panels, above which lights can be installed, also are available for this ceiling. For the ceiling in the WORKBENCH basement we used Armstrong Tongue and Groove Classic Cushiontone with a random pattern of holes. Only two edges of each tile need to be stapled. The other two edges have "tongues" that fit into grooves of already-stapled tiles.

All remodeled rooms in the basement have Armstrong ceiling tile, including the den on the cover. The floor tile in the den is Armstrong Centennial Series, Coda Bisque No. 819. This tile contains gold and silver particles that are extremely attractive. The cabinets, as well as the wall to the left that does not show in the cover photo are made with La Honda Redwood Paneling made by Simpson Lumber Co. Hardware for the cabinets is Amerock Black and Gold No. 3040-E flush hinges, and No. 427-E pulls. Magnetic latches are Amerock 9773 PT. The desk chair, and dictionary and stand were purchased second-hand. The table is a disk of plywood fitted with brass legs. The tile top, (see Women's Page), was created by the wife in this home.

In following issues we will show how the various materials are installed, how to avoid the long, narrow look so common in basement recreation rooms, how to dis-

guise a soil pipe that is located right in the center of a room. $\Delta \Delta$

PARTICIPATING COMPANIES

Armstrong Cork Co.
Lancaster, Pennsylvania

Suspended Ceilings
Classic Cushiontone Ceiling Tile.
Centennial Series Floor Tile.

Simpson Timber Co.
2040PC Washington Bldg.,
Seattle 1, Washington

La Honda Redwood Paneling

Camp Co., 9300 Sangamon St.
Chicago 20, Ill.

Aqua-Shield
Hydro-Plug

Vermiculite Mfg. Co.,
2107 N. 34th St.
Seattle 3, Wash.

Z-Brick

Amerock Corp.
4000 Auburn St.
Rockford, Ill.

Cabinet Hardware

Boyle-Midway Div., Home Products
Corp., New York 17, N. Y.

Epoxite

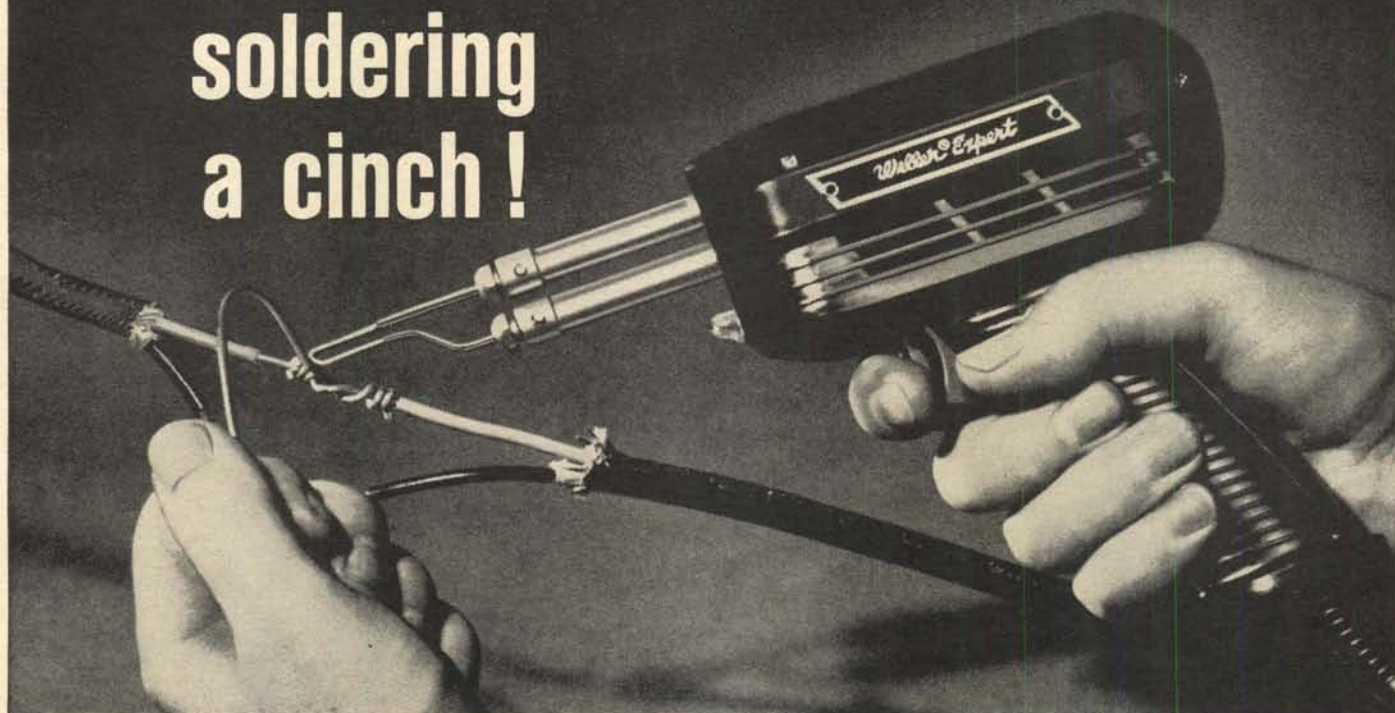
Bilco Co.
New Haven 5, Conn.

Booklet on Basement Doors and
Windows. 25 cents for handling.

Information and/or catalogs can be obtained from the above companies by arrangement with WORKBENCH.

Continued

Makes soldering a cinch!



Weller® Dual Heat Soldering Gun

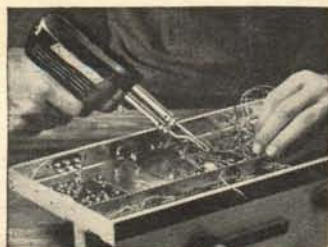
There's no tool like a Weller Dual Heat Gun for quick, easy soldering and scores of household repairs. Pull the trigger—tip heats instantly and spotlight illuminates work. 2 trigger positions give you a choice of two tip temperatures. You can switch instantly to the heat best suited for the job. And by using high heat only when necessary, you prolong tip life.

Tip is made of copper for superior heat transfer and premium-plated for rigidity and long life. Accessory tips

are available for heat sealing, cutting and smoothing.

Over 5 million Weller guns have been sold. They're used by professional servicemen and homecrafters the world over. All Weller guns are UL approved and guaranteed one year against defects in material and workmanship.

Weller dual heat guns are available in many models with wattage ratings to suit your needs. They are also supplied in plastic case kits that include accessories.



A must for hi-fi kit building. Assures noise-free connections. Use low heat when soldering near sensitive components, high heat for chassis connections.



Saves on electrical repairs. Enables you to do many appliance and electrical repair jobs yourself. Also useful for many different crafts and hobbies.



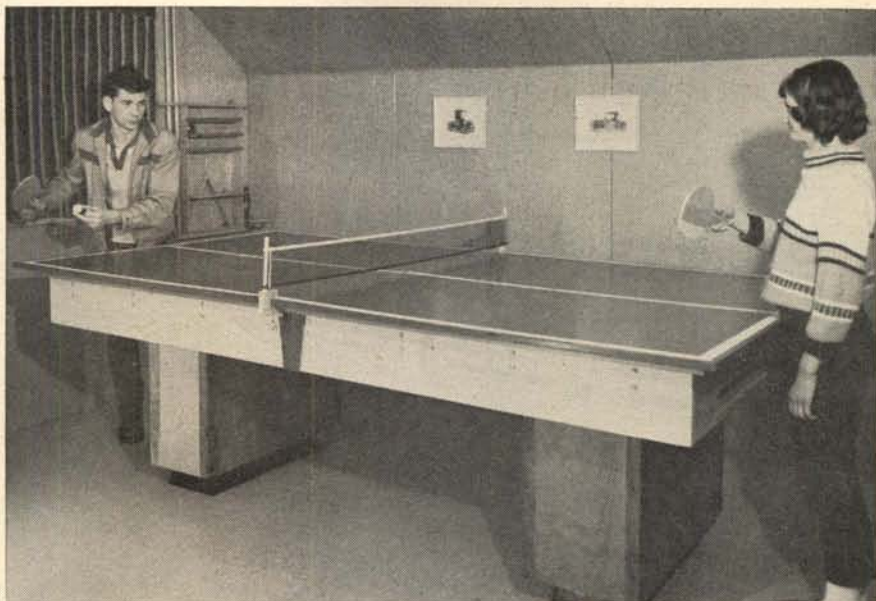
Mends metal. Whether patching holes, sealing seams or joining metal parts, your Weller gun will pay for itself on scores of repair jobs around your home.



Does more than soldering. With cutting and smoothing tips you can cut plastic tile, repair plastic toys, seal plastic bags, repair furniture dents, etc.

WELLER ELECTRIC CORP., 601 STONE'S CROSSING ROAD, EASTON, PA.

Completed table looks as professional as any you could buy, but cost is much less. Your skill makes the difference.



Standard-size table-tennis top fits easily over pool table, making unit serve double duty in recreation room.

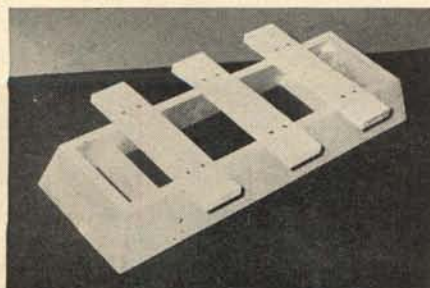
HOME POOL TABLE

Part I

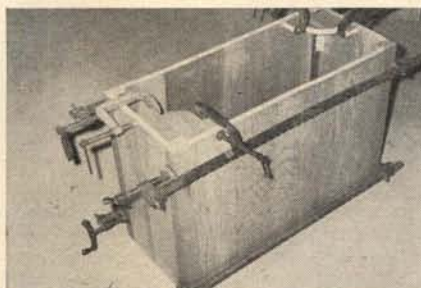
When the Editors of **WORKBENCH** gave me the assignment to build a pool table my first step was to do some intensive research into the present-day status of the game

itself. I learned that pool, (pocket billiards, if you must be technical), no longer is considered a somewhat shady pastime pursued only at the corner pool hall. It has become as respectable as bowling, and indeed, some bowling establishments have

installed pool tables that are for ladies only, and the distaff side has found the game to be really enjoyable. Church organizations have added pool tables to their recreational facilities, and more and more families are installing pool tables



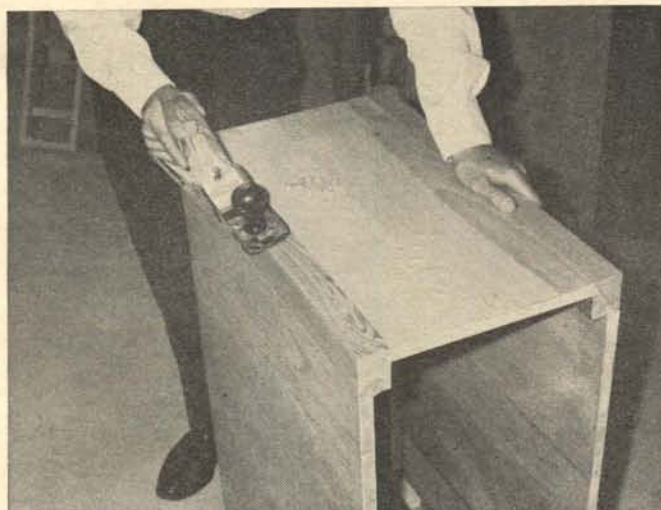
1. Assembled base provides rigid support for leg, has heavy cross members in which levelers are fitted.



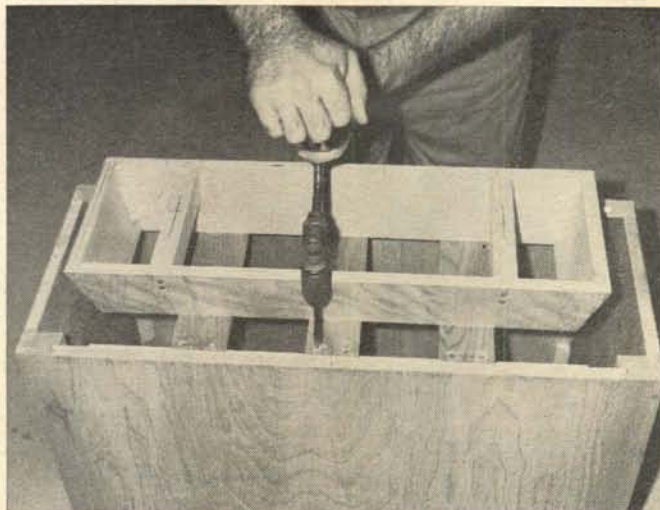
2. Blocks shaped as shown permit clamping leg assembly while glue is setting. Leg corners are solid stock.



3. Cleats by which base is attached to leg are glued and screwed firmly to inside surfaces of leg. Note glue blocks.



4. After glue has set, corner blocks are rounded with plane, rasp and sandpaper. To keep wood clean, sand and finish it.



5. Heavy screws are driven through base cross members into cleats on inside of leg. Assembly must be strong and rigid.

in their home recreation rooms. Our research did turn up a couple of other interesting items: Tables priced for the average budget do not have the rigid construction and quality materials that are required if the unit is to have a long service life and stand up under the abuse that youngsters, and adults, can give it. On the other hand, plush tables of the highest quality can cost as much as \$3,000. Our goal, then, was to produce a pool table of sturdy construction that was not difficult to build, was attractive and priced within the reach of an average family. We believe the table described in these articles meets all those qualifications. Cost for materials, including the optional table-tennis outfit, will be about \$100 to \$125. You can judge the attractiveness of the table from the photographs, while a year of designing and testing has shown the construction to be extremely strong and rigid.

While the plywood and lumber for the basic parts of the table can be purchased at any building-supply dealer, items such as cushions, felt, pocket liners and the like must be obtained from companies that specialize in supplies and equipment for pool tables. Several such sources are listed at the end of this article. We suggest you write for catalogs before starting construction. Pool cues and balls are now made of plastics, as well as wood and ivory; and in a wide price spread. Felt no longer must be a standard green, but can be any of a variety of colors—a result, no doubt, of the feminine interest in the game.

Start construction by making leg bases, Figs. 1 and 6. Birch-faced plywood was used for the sides and ends of the bases for the orig-

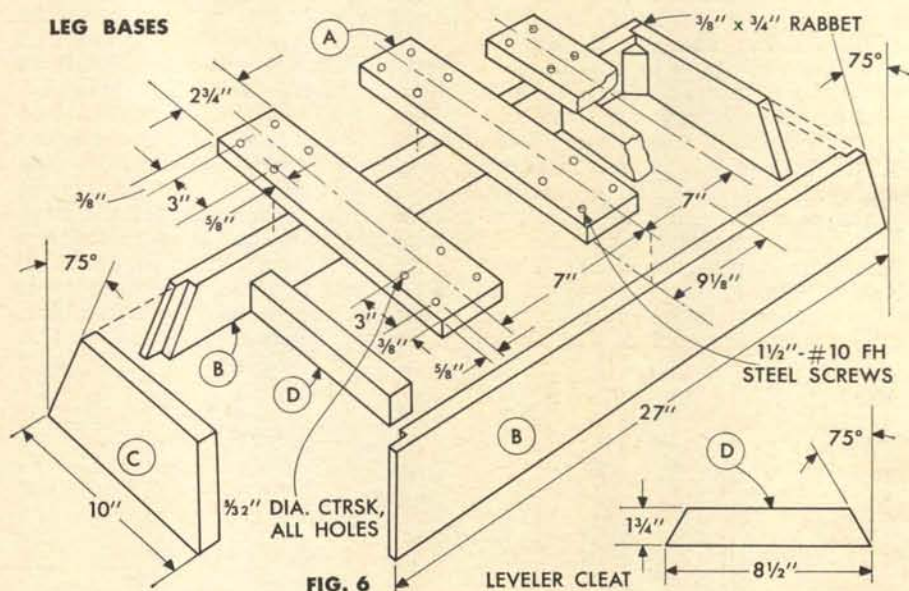
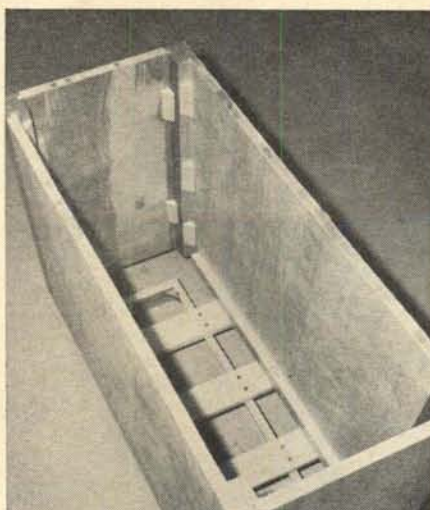


FIG. 6

inal table. Birch was chosen because this light-colored wood will accept any color or tone of stain. The solid stock used for the leveler cleats must be clear, straight-grained lumber. These leg bases are the foundation for the completed table and must be as strong and rigid as possible. Use 1 1/2-in.-No. 10 flathead wood screws to attach the crosspieces, and 2-in.-No. 10 screws to attach the leveler cleats. The corners of the bases are fastened with finishing nails that are countersunk. The depressions are filled with wood putty and sanded smooth. Glue is used on all joints. Note that the sides of the bases are rabbeted to receive the ends.

The legs, Figs. 9 and 10, are made next. The required four ends and four sides can be cut from one 4 x 8-ft. sheet of plywood. An end



7. View of inside of leg shows solid construction, positioning of glue blocks. Solid-core plywood was used for legs.



8. Brackets for attaching top and legs are screwed to cleats that, in turn, are glued and screwed to inside of the legs.

piece and side are marked on the sheet beside each other, the 30¼-in. dimension and the 11¼-in. dimension adding up to 41½ in. You will get four rows of these pairs in an 8-ft sheet of plywood, the saw kerfs requiring a total of about ¾ in. You will have only a scrap strip left. A rabbet is cut on two edges of each end and side, producing "tongues" that fit in grooves in the corner blocks. These blocks, Fig. 9, are grooved as indicated, then the sides, ends and corners are assembled, Fig. 2, us-

- Leg Base**
 ¾" Hardwood Plywood
 A, Crosspieces, 2¾" x 12¾", 6 req'd.
 B, Side, 5" x 27", 4 req'd.
 C, End, 5" x 11", 4 req'd.
 1¼" Solid Stock
 D, Leveler Cleat, 1¾" x 8½", 4 req'd.
- Leg**
 ¾" Hardwood Plywood
 1, Side, 23¾" x 30¼", 4 req'd.
 2, End, 11¼" x 23¾", 4 req'd.
 W, Connector base, 4¾" x 12¾", 4 req'd.
 X, Connector riser, 4¾" x 10½", 4 req'd.

MATERIAL LIST

- 2" Solid Stock
 3, Corner, 1¾" x 2¼" x 23¾", 8 req'd.
 1" Solid Stock
 4, Base Cleat, 1¼" x 30", 4 req'd.
 5, Bracket cleat, 1¼" x 7", 8 req'd.
 6, Glue Block, ¾" x 3", 48 req'd.
 Table Top, 4' x 8', particle board, 1 req'd.
 Table Top Bracket, ¾" plywood
 Y, Base, 5½" x 8½", 4 req'd.
 Z, Riser, 4¾" x 8", 4 req'd.
 ½" x 2¼" Carriage bolts, with nuts and washers, 8 req'd.
 Reinforcing Cleats, Solid Stock
 Ends, 1¼" x 1¼" x 39½", 2 req'd.
 Sides, 1¼" x 1¼" x 40¼", 4 req'd.

ing glue. Note in Fig. 2 the "gluing jigs" used. These are plywood scraps, cut square, then notched to fit around the corner blocks of the leg assembly. "Lugs" are shaped on two corners, as indicated, to permit fitting on C-clamps. When the glue has set, attach the bottom cleats, Figs. 3 and 9 with glue and 1¼-in.-No. 10 flathead screws. The cleats are spaced 13/16 in. from the lower edge, which is the thickness of hardwood-faced plywood, scraps of which are used to make the base crosspieces. The bases now are screwed to the cleats in the legs, Fig. 5. At this point the corners of the legs are rounded with a plane, rasp and sandpaper, Fig. 4. It also

is a good idea to sand all surfaces of the legs and clean off any marks, then apply a couple of coats of finish. This will prevent the wood from becoming soiled and stained when it is handled. Glue blocks can be fitted between the corner pieces and ends and sides of the legs at this time, Fig. 7, to add strength to the assembly.

Four cleats now are fitted near the top edge of each leg on the inside surfaces of the sides, Fig. 9, to receive the attachment brackets. The brackets are made as indicated in Fig. 9, then attached, as in Fig. 8. You now have two completed leg assemblies, Fig. 10.

The table top is next, Fig. 13. It

LEGS

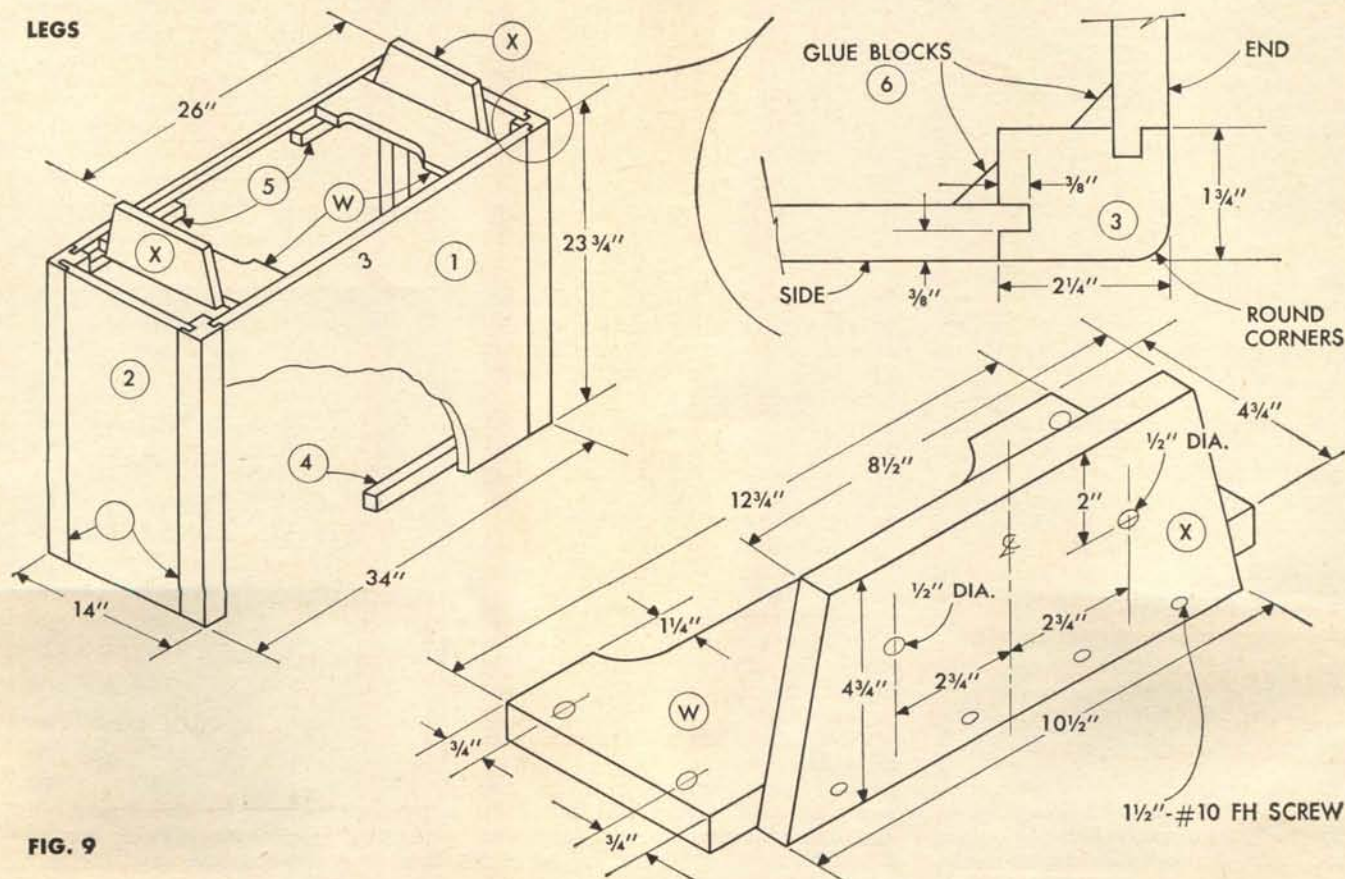
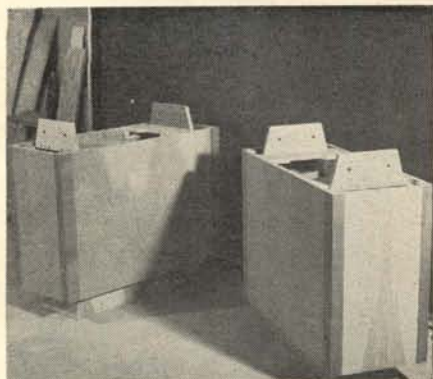


FIG. 9



10. When both legs are completed they will look as these do. Note that dark wood is used for corner blocks of legs.



11. Corner and center pockets are marked out accurately, then are cut with electric jig saw, or hand coping saw. Edges are undercut 5 degrees.

is a 4x8 sheet of $\frac{3}{4}$ -in. particle board, openings being cut for the six pockets as indicated Fig. 11. Clearance holes for flathead wood screws are drilled as indicated, to permit attaching the reinforcing strips. These strips, Fig. 13, are marked as indicated and $\frac{1}{2}$ -in. holes drilled. The latter holes provide clearance for bolts in a later part of the assembly.

The attachment brackets for the top, Fig. 12, are made as indicated, then screwed to the underside of the table top, Fig. 12. The center line of each bracket is located 16 in. from the end of the top, and the brackets are spaced to allow a small amount of clearance between them and the brackets on the legs. The legs, of course, are positioned so they are centered on the width of the table top. Continued in the next issue.

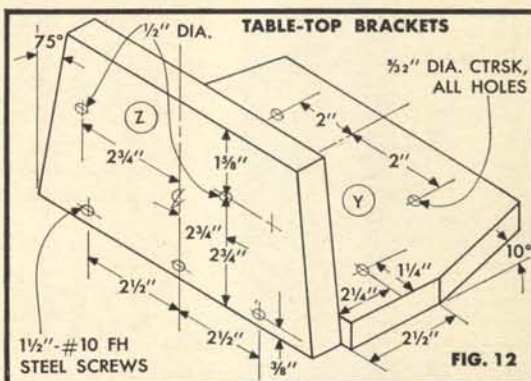
Supply Sources

A. E. Schmidt Co., 112 Sidney St., St. Louis 4, Mo.

F. Grote & Hubbel Co., 80 Fourth

Ave., New York 3
Rochester Bowling and Billiards Supply, 500 Lyell Ave, Rochester, New York.

Craft Patterns, A. Neely Hall Productions, Elmhurst, Ill., (parts and full-size plans for a folding-leg pool table).



Brackets on bottom surface of table top are centered exactly 16 in. from ends of top. They also must be square with edges.

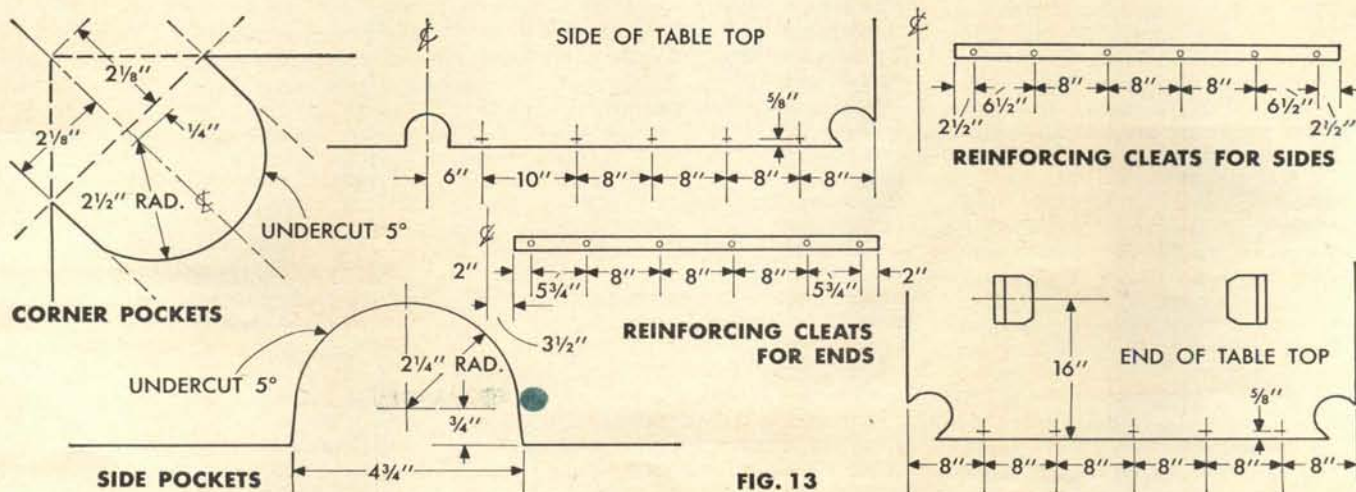
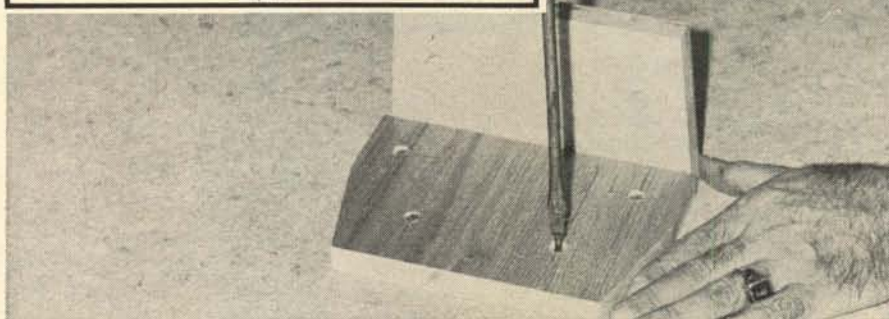
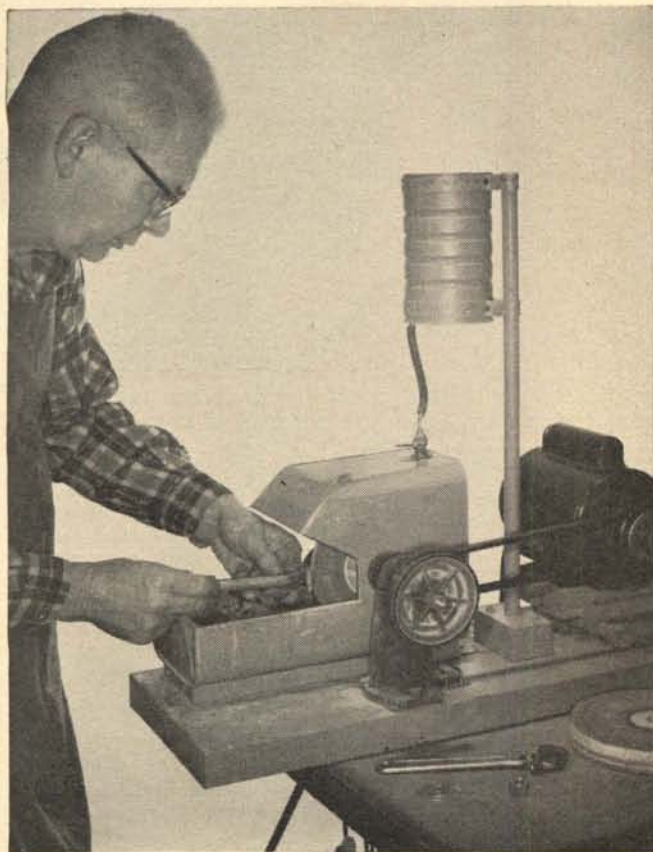


FIG. 13



Part II

Although beginners in gem cutting get excellent results from improvised equipment, detailed in Part I, the work can be done more efficiently with a unit having a number of different speeds, and that allows grinding to be done on the wheel face. Such a unit, made at small cost, is in Figs. 1 to 5.

Before making this, order a few items from a gem-cutting supply house that are not usually available from hardware stores and local sources. Then build the equipment so it will be ready when the ordered items arrive. The latter are two 1 by 6-in. silicon-carbide grinding wheels with $\frac{1}{2}$ in. arbor holes, one of 100 grit, the other 220 grit; a few disks of silicon-carbide cloth, Nos. 220, 400 and 600 grit; polishing powder, $\frac{1}{2}$ lb., such as tin oxide, cerium oxide or levitated alumina.

All the components are mounted on a 2 x 10, 26 or 28 in. long. Use a grinding head about 5 in. high, having a $\frac{1}{2}$ -in. arbor threaded for 2 in. at each end. As most grinder heads have a single V-pulley, it will be necessary to mount part of a cone pulley on the right end of the arbor which is to be used for sanding and polishing. Get a $1\frac{1}{2}$ - $2\frac{1}{2}$ -4-in. cone pulley for $\frac{3}{8}$ or $\frac{1}{2}$ -in. V-belts and saw off the $1\frac{1}{2}$ -in. portion. After mounting the 2-step section there will still be space for a disk sander or buff on a $\frac{1}{2}$ -in. plywood

backing with a resilient pad as detailed in Part I.

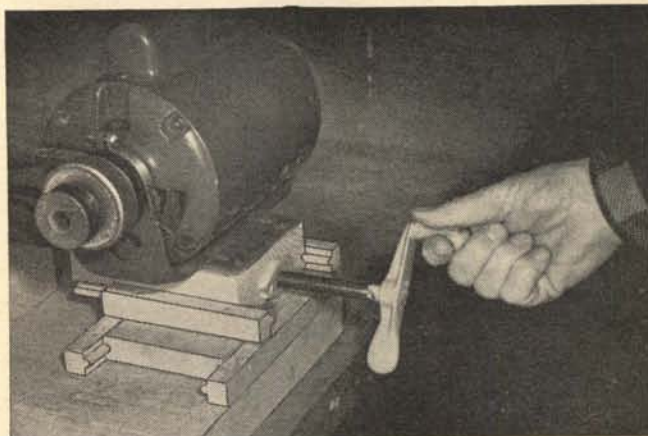
The grinder-head belt is confined to the head so you will need an extra V-belt. To prevent interference from the confined belt when driving with the cone pulley, the belt is held away from the pulley by a curtain-rod bracket, Figs. 3 and 5. For extremely slow speeds, substitute a 6, 8 or 10-in. pulley for the cone pulley. Various speeds obtained are shown in Fig. 5.

The motor also is provided with a $1\frac{1}{2}$ - $2\frac{1}{2}$ -in. portion of a cone pulley, or two separate pulleys. Alignment of pulleys on motor and grinder is obtained by means of a two-movement carriage, Figs. 4 and 5. This has a threaded crank to adjust belt tension.

You can make the wheel guard and splash pan from a 5-gal. oil can. Allow metal for wiring the edges, (11-ga. wire), when cutting the can. This adds rigidity and eliminates sharp edges. An extra wood base may be needed to raise the can to position the grinder-head arbor midway between the top and bottom. A short bushing on the arbor will position the grinder wheel away from the side of the can.

Water for the grinding wheels is supplied from an overhead tank, Fig. 1. A petcock to control the water supply is mounted on the

1. This homemade gem cutter has variable speeds for efficient sawing, grinding, sanding and polishing of various gem stones.



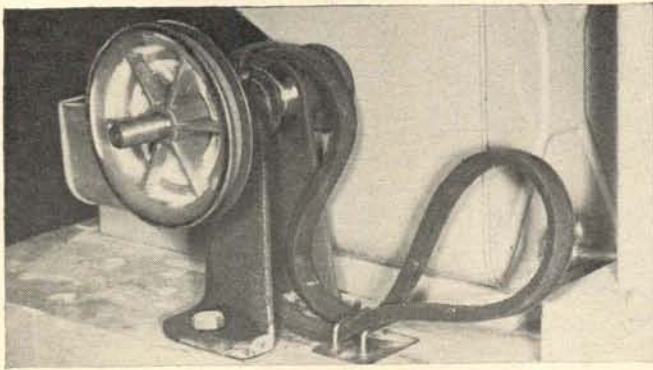
2. Turning the crank of two-movement motor carriage quickly loosens belts or tightens them to the proper tension for running.

GEM CUTTING

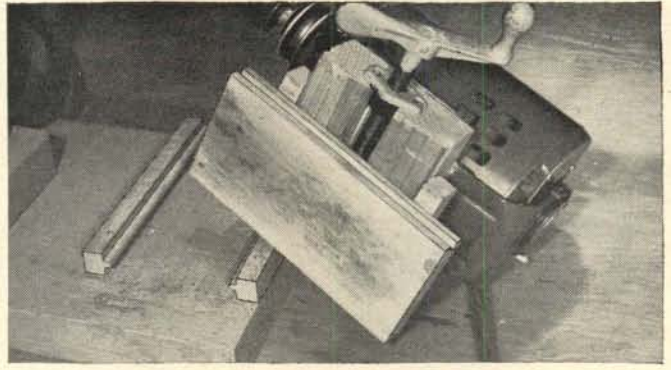
E. R. HAAN

wheel guard. One end of the petcock is fitted with a short length of brass or copper tubing that slips inside the rubber tubing from the water can. The other end of the petcock is reamed to a slight taper to match the tapered end of the nozzle tube, and so provide a "friction fit". This allows the nozzle to be removed and reinserted quickly when changing wheels. The tube is bent as in Fig. 5, the lower end is soldered shut, then a No. 80 hole is drilled. The fine stream of water from the nozzle should strike the side of the wheel about 2 in. from its face. The water travels to the wheel face by centrifugal force.

Most gem cutters saw stone with a diamond-impregnated blade and use a mixture of light motor oil and kerosene for lubricant. Proportions are from 1/10 to $\frac{1}{2}$ as much oil as kerosene. The cutting lubricant is in a small, narrow container you make of sheet metal. It is positioned under the blade and bolted to the end and side of the splash pan. It should be high enough to let the blade pass through the cutting lubricant to a depth that will cause a slight mist to be thrown from the wheel. Speed may vary from 1,500 to 2,500 s.f.p.m. Fig. 6 shows a small trim saw that has splatter shields and a railing along the table edge to return the cutting lubricant to a sump below.



3. Large pulley on end of grinder-head arbor gives slower speed for sanding, polishing. Bracket holds belt clear.



4. Motor carriage has grooves cut in it to match the tongue edges of lengths of flooring used as guides for the carriage.

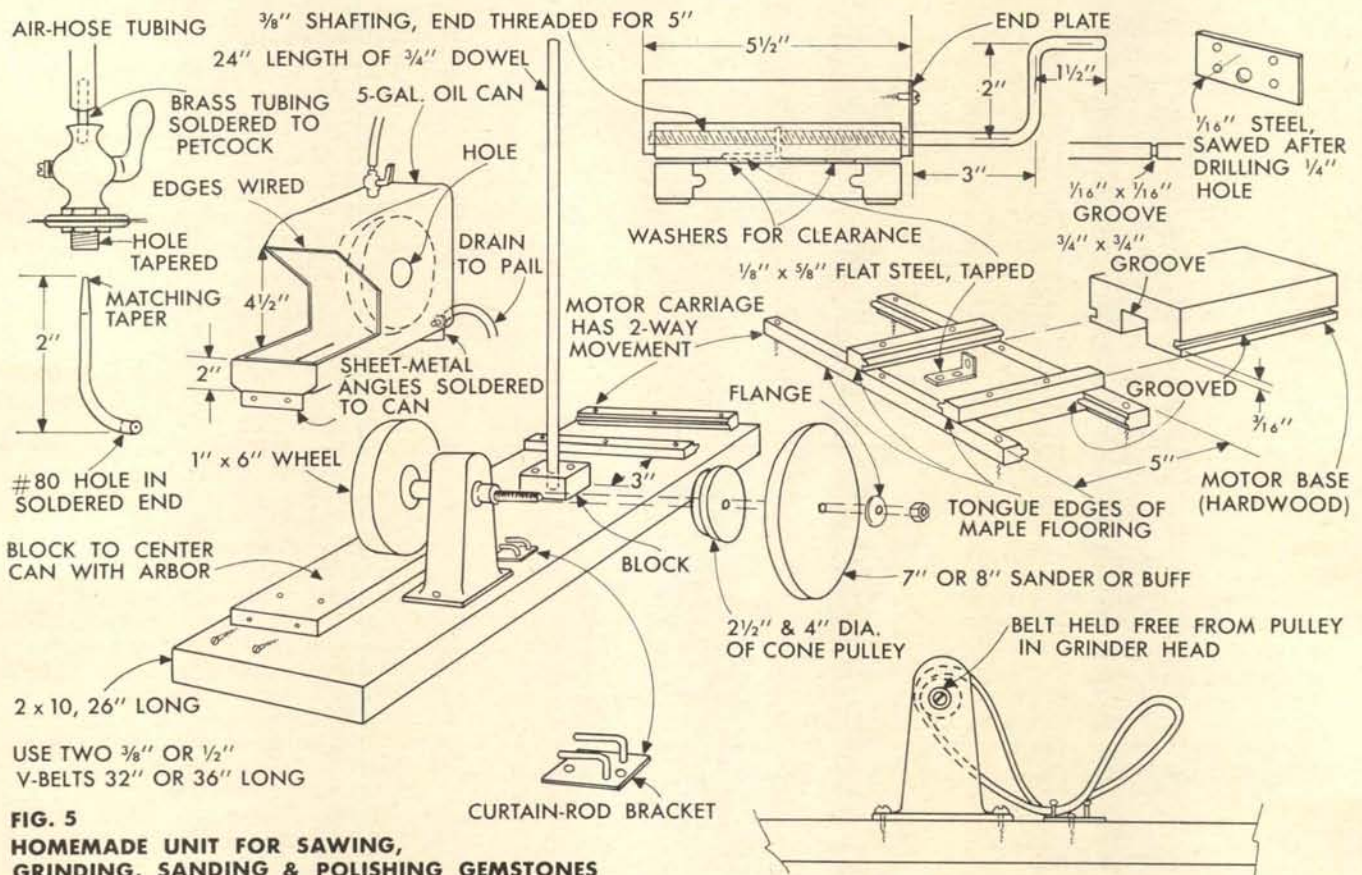
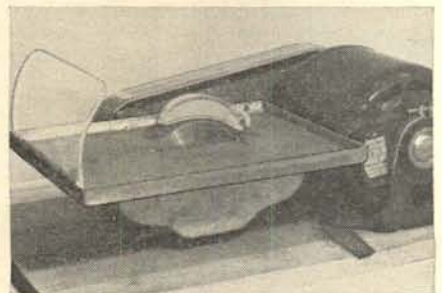


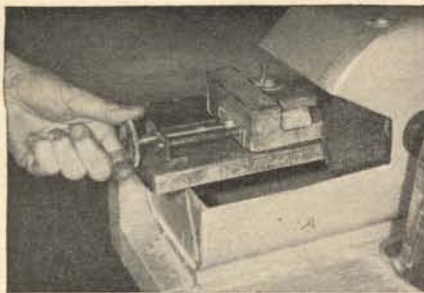
FIG. 5
HOMEMADE UNIT FOR SAWING,
GRINDING, SANDING & POLISHING GEMSTONES

PULLEY SIZES (1725 rpm motor)

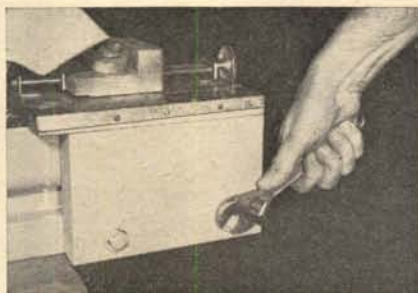
Wheel type, size, desired speed.	Drive pulley	Driven pulley
6" diamond saw 1078 rpm, 1676 sfpm	2 1/2"	4"
7" cut-off wheel 2874 rpm, 5269 sfpm	2 1/2"	1 1/2"
6" or 7" mud saw, 430 rpm	1 1/2"	6"
320 rpm	1 1/2"	8"
258 rpm	1 1/2"	10"
6" grinding wheel, 2874 rpm, 4514 sfpm	2 1/2"	1 1/2"
8" sander or buff 1078 rpm, 2257 sfpm	2 1/2"	4"
647 rpm, 1355 sfpm	1 1/2"	4"
6" sander or buff 1078 rpm, 1676 sfpm	2 1/2"	4"

6. Diamond-blade trim saw has splatter shields, pan-type table that returns cutting fluid to sump below table.





7. Homemade saw-table attachment for unit in Fig. 5 has screw feed. Stone was cut with silicon-carbide disk.



8. Saw table is attached rigidly to base by means of two lag screws passing through 2-in.-stock side plate.

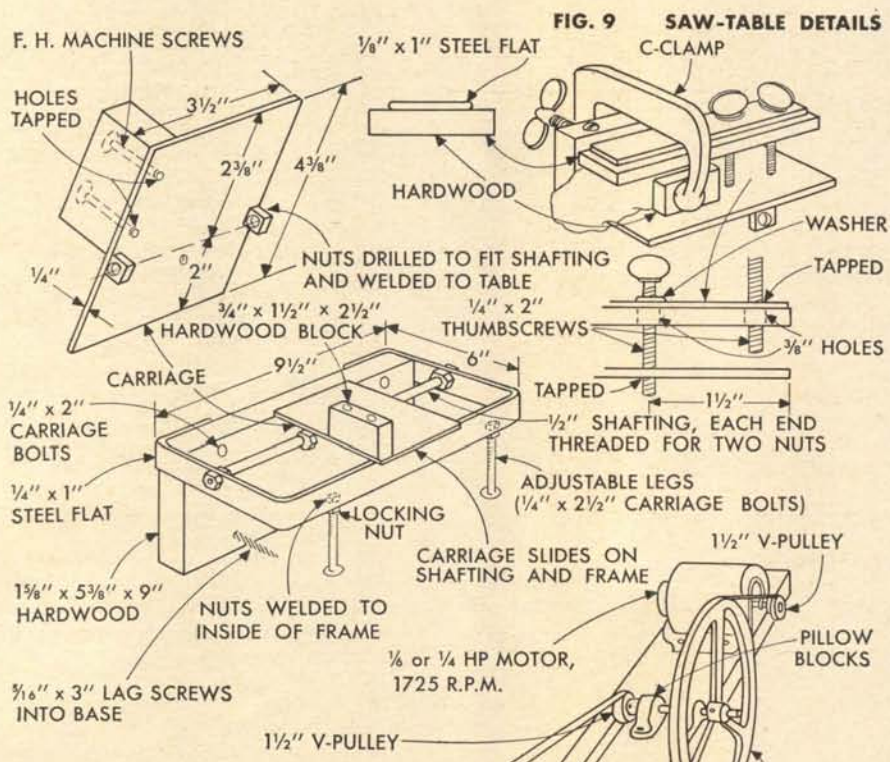
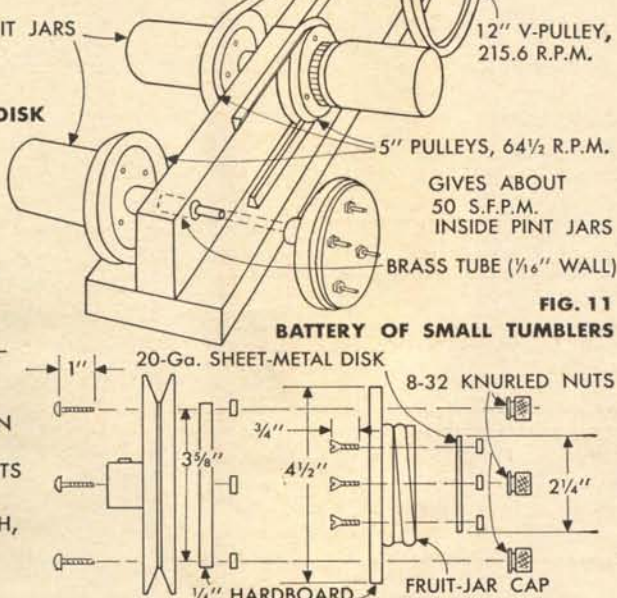
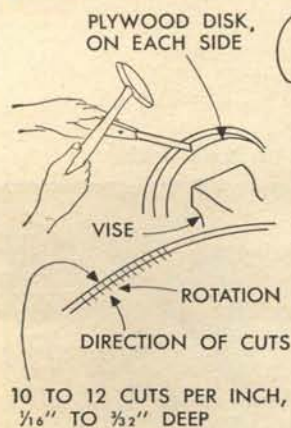


FIG. 10 RECHARGING COPPER DISK



A diamond saw gradually loses its set and then tends to bind in the cut. This is greatly accelerated by end play of an arbor which, therefore, should be avoided. To renew the set of a diamond saw you tap the periphery gently with a light-weight hammer. When most of the diamond dust has been worn off a copper or phosphor-bronze blade it can be recharged. To do this, tap a sharp knife with a hammer, as in Fig. 10, to make ten or twelve 1/16 to 3/32-in.-deep cuts per inch in the blade at a slight angle, opposite to the direction of rotation. A full carat of No. 60 diamond dust is used for an 8-in. blade. Mix the dust with a little petroleum jelly and force the mixture into the cuts with a toothpick. After so charging the blade, tap its edge gently, and also the side adjacent to the edge, so the dust will be held securely by the metal.

You can use a silicon-carbide cut-off wheel, as in Fig. 7 for sawing. A 7-in. wheel can be accommodated in the unit in Fig. 5. Water is used on the wheel as in grinding. For safety these saws must be handled carefully and well guarded, as they are fragile and apt to break from side strain or impact. **Always wear safety glasses or face shield.**

To cut stone by "mud-sawing" you use a 6 or 7-in. sheet-metal disk, (20 or 22 ga.), and run it at a speed of 250 to 450 r.p.m. Brush an abrasive paste containing No. 100 to 220-grit silicon-carbide powder on the saw edge just before it contacts the stone. Or, let the wheel run through an abrasive mixture to which clay flour has been added to produce a suitable consistency. This is placed in a container such as that used for the cutting lubricant in diamond sawing. Mud-sawing is the least expensive of the three methods.

Fig. 9 shows the construction of a saw table to fit the unit in Fig. 5. The sliding carriage is held by a metal frame bolted to a side wall of 2-in. lumber that is firmly attached to the base with lag screws, shown in Fig. 8. For resistance to downthrust of the saw two adjustable legs are provided to rest firmly on the bottom of the splash pan. The one closest to the saw must be positioned to provide clearance for the lubricant container.

Fit the carriage carefully so it slides on the 1/2-in. shafting without play, and will be level when it rests on the side of the frame on which it also slides. With this arrangement, feeding is done by hand. You can provide a screw feed by substituting a threaded crank to engage threaded nuts on the underside of the carriage. The crank is held by retaining collars where it

Continued on page 65



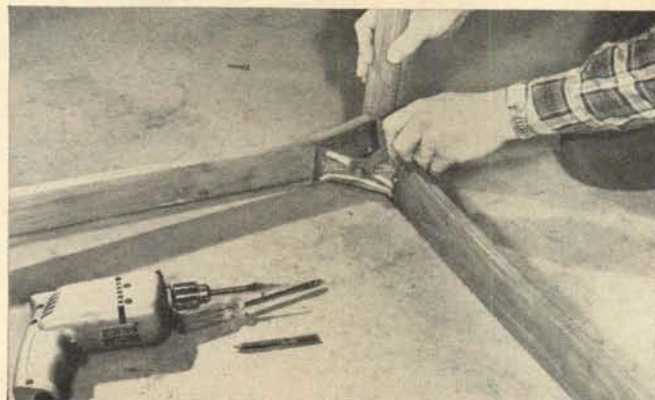
Four-Evening Dining Table

Too often plans for making a major piece of furniture get filed away for use "sometime", because the project seems to require too much time. Here is a full-size dining table you can complete in just four evenings of work. It can be styled in walnut or maple to suit the decor of your home and the total cost will be around \$40. The factors that make the job so easy and quick are the use of prefinished plastic paneling in wood-grain design for the top and a machined, pre-assembled extension slide. Further speeding the job are turned and sanded tapered legs, plus an easy-to-apply finish that is a world-beater for a hand-rubbed appearance on hardwood.

Hardwood legs of the type required may not be available locally, but are sold by mail by several advertisers in **WORKBENCH** who specialize in material and supplies for home craftsmen. While the legs are supplied with screw-on brackets, and are fitted with hanger bolts, neither of these items is used for this table. The brackets can be discarded, or kept in the junk box in the shop, while the hanger bolts are removed and kept in the bolt-storage box in the shop. The finish referred to is Weldwood's Deep Finish Firzite. The dust and brush-mark problems usually encountered in wood finishing are practically non-existent with this particular finish.



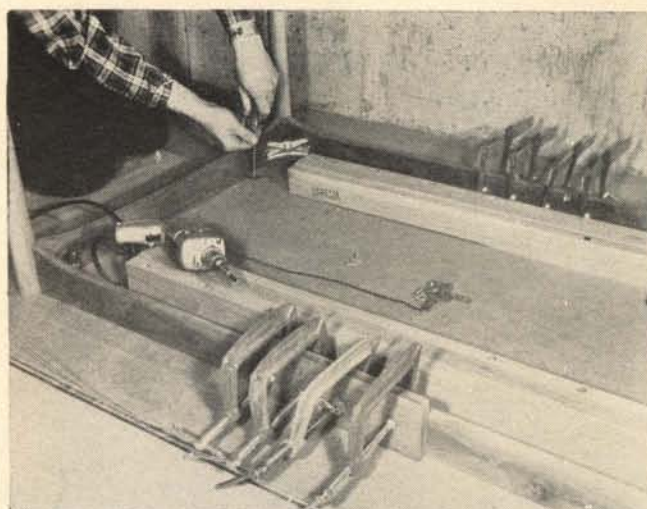
1. Top of table is glued-up sandwich of plywood, hardboard and Marlite. Glue is used on both surfaces of each layer.



2. Corners of apron are mitered, then fitted with corner braces to make a strong, rigid assembly with the legs.



3. Extension slides are centered over the joint between table halves, then screwed in place.



4. Sides of apron are cut at center, held together with clamps and blocks. Cuts are aligned with joint in table top.

Schedule the project this way to complete it in four evenings:

First evening, glue-up the top from 4 x 8-ft. sheets of hardboard, plywood and Marlite (plastic-surfaced, wood-grain hardboard). Use glue on both contacting surfaces of each layer of the sandwich, Fig. 1. Set it aside to allow the glue to dry, then cut the members for the apron, Fig. 5. Make the kerfs for the corner braces and the table-top fasteners on the inside of each piece. Notch the legs as indicated, then glue the mitered joints of the apron, glue on the legs and assemble with the corner brackets, Fig. 2.

Second evening, cut the sandwich in half across the 48-in. dimension and turn the two halves 90 degrees. The wood-grain pattern that ran the length of the sandwich now will run across the width of the table.

Cut the long sides of the apron exactly at midpoint and fit the assembly onto the underside of the top, Fig. 4, holding the apron assembly together with clamps and scraps of wood. Position the cuts in the aprons directly over the joint in the table top and attach the apron assembly to the top with table-top fasteners, Fig. 4. These fasteners allow some "give" in the assembly when temperature and humidity conditions change.

Third evening, saw the top corner radii, Fig. 6 and

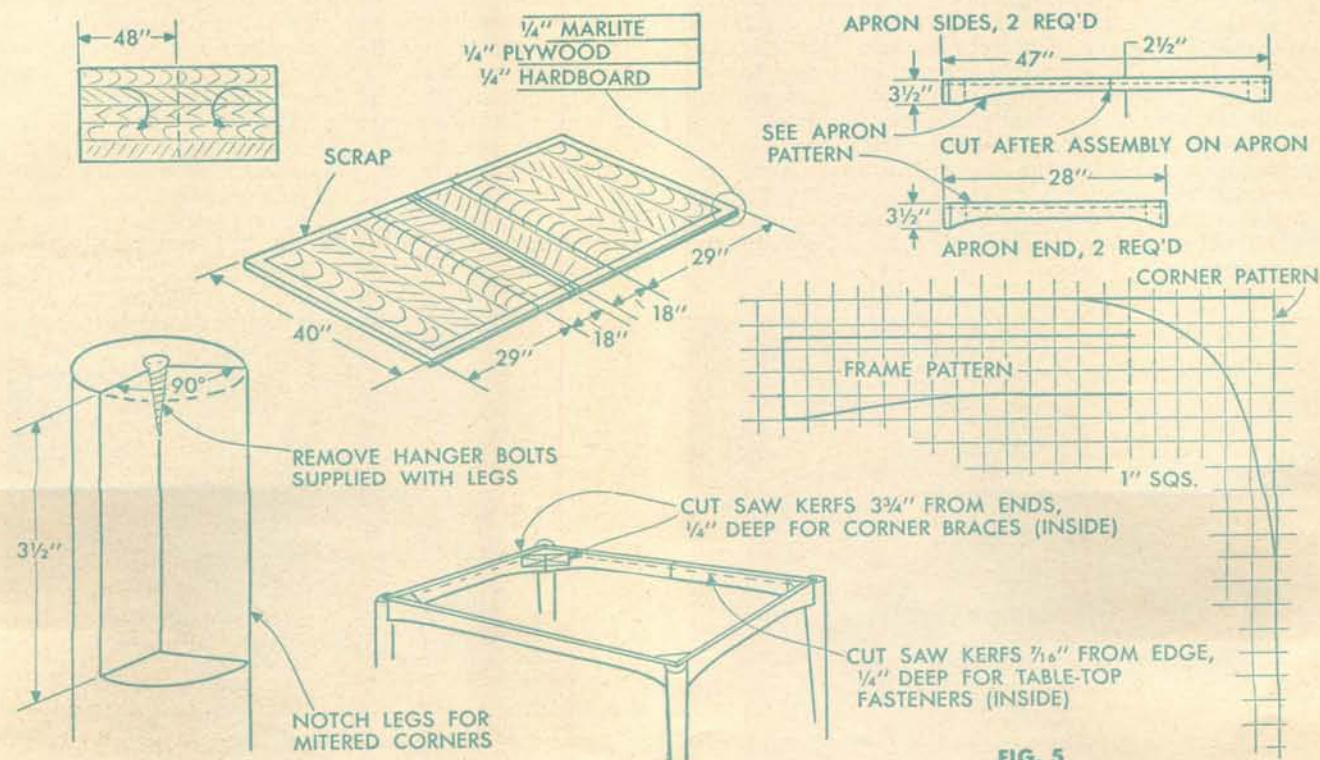


FIG. 5



sand the edges which will be slightly rough from the sawing. Drill the top pieces and leaves for the $\frac{3}{8}$ -in. guide pins, Fig. 7. Apply veneer tape to the edges of the table top and the leaves (ends only, on the leaves), using contact adhesive. The veneer, of course, is chosen to match the wood-grain pattern. A roller, as in Fig. 8, speeds up the job of applying the tape. Punch through the tape on the inside edges of the table-top halves and glue in the guide pins. Glue the pins in the table leaves. Finally, apply the first coat of Firzite.

Fourth evening, steel-wool the first coat of Firzite, wipe and apply the second coat. The table can be used after the second coat of Firzite has been allowed to dry overnight. You can rub the second coat with 4/0 steel wool for a finer finish, if you wish. $\Delta \Delta$

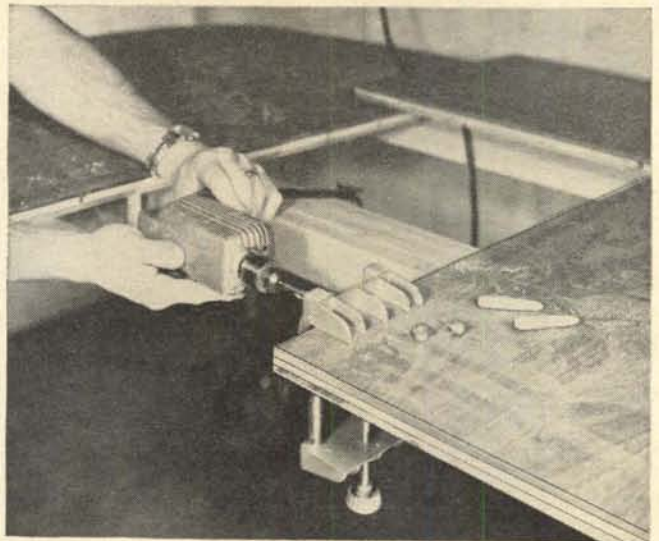


8. Contact adhesive is used to apply veneer tape to edges of table top and the leaves.

9. Oil-resin finish (Deep Finish Firzite or equivalent), is applied with brush to all surfaces, then wiped with soft cloth.

6. Pattern is used to mark shape of table top, then it is cut out with saber saw, edges are sanded smooth and square.

7. Table halves and leaves are drilled with aid of doweling jig to receive $\frac{3}{8}$ -in. guide pins that keep members aligned.



Material List

- 4 x 8-ft. sheet Marlite Wood-panel, (Am. Walnut or Nor. Maple), 1 req'd.
- 4 x 8-ft. sheet $\frac{1}{4}$ -in. fir plywood, 1 req'd.
- 4 x 8-ft. sheet $\frac{1}{4}$ -in. tempered hardboard, 1 req'd.
- Tapered 29-in. table legs, walnut or maple, 1 set req'd.
- 1 x 4 x 30-in. FAS walnut or maple, 2 req'd.
- 1 x 4 x 48-in. FAS walnut or maple, 2 req'd.
- 1 in. x 8 ft. roll walnut or maple veneer tape, 4 req'd.
- 36-in. table extension slides, 38-in. travel, 1 pr. req'd.
- $\frac{3}{8}$ x $1\frac{1}{4}$ -in. birch table pins, 6 req'd.
- Table lock, 1 req'd.
- $\frac{3}{4}$ -in. table-top fasteners, 1 doz. req'd.
- Leg-corner braces, 2 x $4\frac{1}{2}$ in., with hanger bolts and screws, set of 4 req'd.
- $\frac{5}{8}$ "-No. 8 RH wood screws, 1 doz. req'd.
- 1"-No. 10 RH wood screws, 1 doz. req'd.
- $1\frac{1}{4}$ -in. swivel glides and ferrules, set of 4 req'd.





1. With chair on table or bench at convenient working height, first remove dust cover, driving out tacks.



2. While compressing each row of springs with wooden strips, install steel webbing between them.

REUPHOLSTERING

Worthwhile savings are possible by doing your own reupholstering. For a Louis XV chair, as shown, a task a beginner can handle, reupholstering will cost from 6 to 18 dollars, depending on the fabric. There will be slightly more expense in upholstering a chair from scratch (such as the Georgian Arm Chair in this issue), because of the cost of springs, twine, etc. Most of the same processes are used.

Upholstery fabrics usually are 54 in. wide. The width goes across seat and back. Make accurate measurements with a tape, following the contour of the old covering, or the new springs to the edges, then allow some surplus. This allows moving the material to align

a pattern on seat and back. Mark the material on the back with a crayon or soft pencil.

Make necessary repairs to springs and framework before doing the recovering. If you are working on a "tight-spring" seat supported by jute webbing, like the one illustrated, about the only needed repair is to raise sagged seat springs. This can be done from the underside without stripping the chair. If the springs are loose where tied, they will have to be retied.

To correct spring sag, first remove the dust cover, Fig. 1. Drive out the tacks with an upholsterer's

"ripper" or a small chisel-edge screw driver and mallet. Avoid prying out tacks, as this may cause damage to the visible edge of the rails. Assuming that no springs are loose, it only is necessary to draw up the sagged spring assembly and reinforce it with steel webbing. This comes in $\frac{5}{8}$ and $\frac{3}{4}$ -in. widths and is perforated. Nail it to the rails so it comes over a row of springs while they are compressed with two lengths of 1 x 2. They are fastened to the rails with No. 7, $1\frac{1}{4}$ -in. screws. Space the strips so the steel webbing can be fitted between them.

4. Spring assembly returned to normal position now is held with steel webbing. Cross strips are "woven."

5. Old gimp is removed from chair before tacking new fabric in place. New fabric can be applied over old.

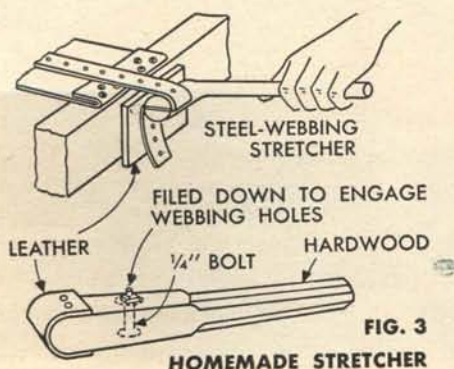
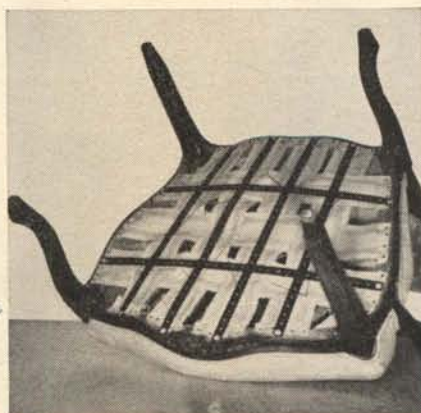


FIG. 3

HOMEMADE STRETCHER





6. Draw fabric tightly from top to bottom at center while tacking, so fabric will lie flat in concavity of the back.



7. Use punch or nail set to sink tacks after starting them, so chance of marking wood is eliminated.



8. Fastening fabric with stapler is faster than using tacks, but tacks still are necessary in some places.

Use webbing nails, drilling pilot holes for them to prevent splitting the chair frame. After nailing one end of the webbing, stretch it with a webbing stretcher, then nail the other end, drilling pilot holes for the nails, Fig. 2. In Fig. 3 is shown a webbing stretcher, also a shop-made unit. Cut off excess webbing before nailing it. When a hole in the webbing does not center over a rail, drill an extra hole. After installing the front-to-back webbing, proceed with the cross strips, "weaving" them through the other strips. The finished job is in Fig. 4. Stitching twine, often used to hold springs on webbing now will be loose and must be drawn up tightly and retied. Then replace the dust cover or install a new one.

To recover the seat and back, first remove the gimp along the edges of the old covering, Fig. 5. Often new fabric can be applied over old, but do not attempt a third covering over previous ones. Some pleats at corners of the fabric may have to be cut out and tacks removed. For a chair such as shown, recover the back first, then the seat and arms.

Start fastening the fabric at the center of the back from top to bottom while holding it taut, Fig. 6. Use No. 2 or 3 tacks or 1/4-in. staples, spaced 1/2 to 3/4 in. Stapling, Fig. 8, is much faster. Some tacking, however, still may have to be done in places where a stapler cannot reach. Where fabric is fastened in a groove, start the tacks with a magnetic tack hammer, then sink



9. Razor blade in suitable holder is ideal for trimming away surplus cloth after tacking has been completed.



10. Glue from squeeze bottle is spread uniformly on back of gimp for short distances before tacking it in place.

them with a punch, Fig. 7, to prevent hammer marks. Tacks or staples should come about 1/4 in. from the point where the fabric is to be trimmed. A razor blade in a holder is suitable for this, Fig. 9.

Next, apply the gimp, which should match the prevailing color of the fabric. Joints between the ends of gimp should be located at inconspicuous points. Fasten the starting end of gimp with a concealed nail, Fig. 11, which also shows the use of nails where the gimp butts against legs—points where gimp may loosen. Use ordinary white glue, applying it uniformly over the back of the gimp, Fig. 10, when installing it. Fig. 12 shows the final touch of applying gimp to the arm rests.

If a chair has loose seat springs it will be necessary to remove covering and padding in order to retie the springs. Only a few springs may require tying, but if most are loose, it is advisable to rebuild the seat

entirely. This starts with a new spring support. When jute webbing is used for this, you will need a webbing stretcher, Fig. 13. After folding the free end of the webbing and tacking it double to the rail with No. 12 tacks, the stretcher is used to hold the webbing taut while the other end is tacked, then doubled and tacked again. Weave the cross webbing.

You can eliminate webbing, and its subsequent sagging, if you replace the springs with similar ones fastened to spring bars, Fig. 15. Or, you can use 3/8-in. plywood or tempered hardboard fitted closely be-

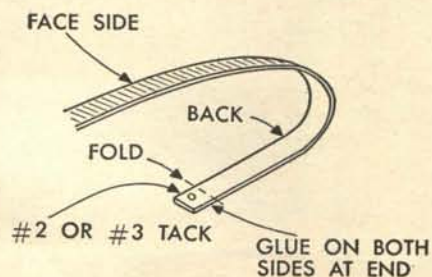
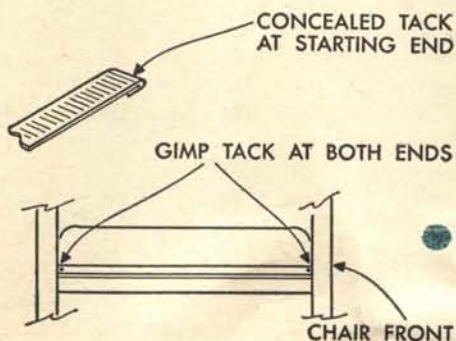
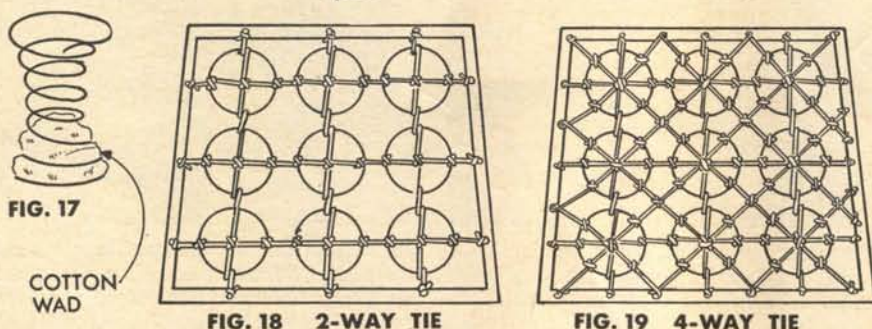
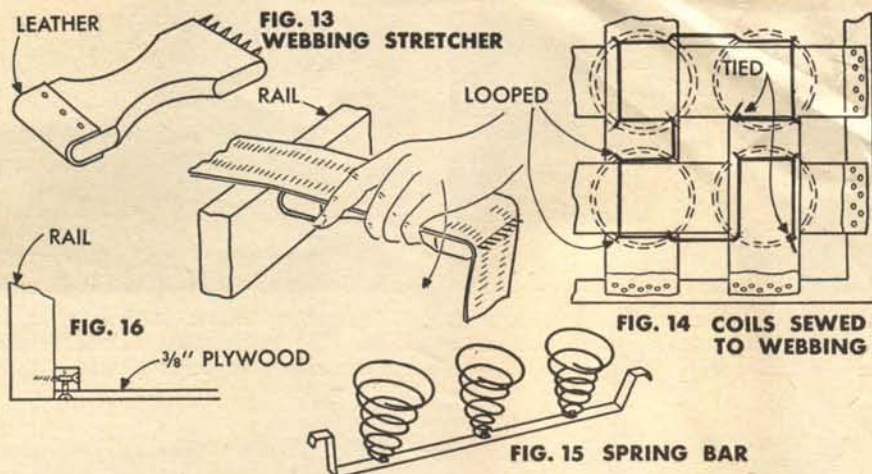


FIG. 11 APPLICATION OF GIMP



12. Final touch of gimp is at arm rests. Joint where ends of gimp meet are located inconspicuously on the inside.



tween the rails and glued to 1/2-in.-sq. cleats that are glued and screwed inside the rails, Fig. 16. The springs are held to the plywood with 3/8-in. staples. A wad of cotton in each spring, Fig. 17, prevents noise of the springs striking

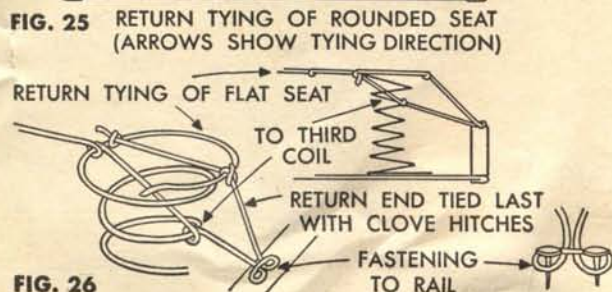
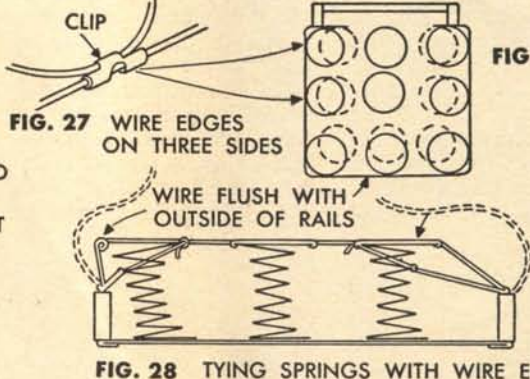
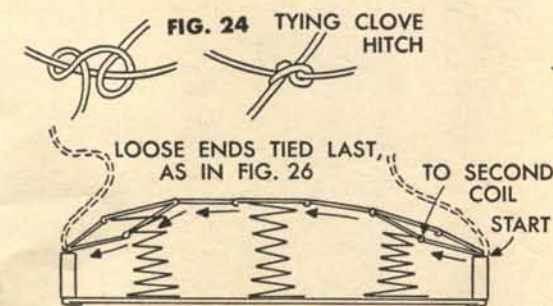
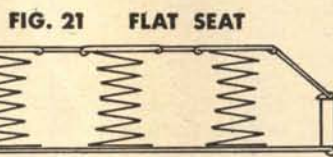
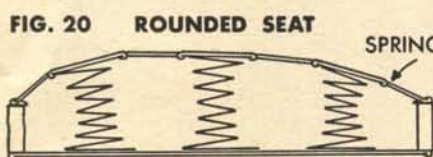
the plywood. The ends of coil seat springs have tips that are bent downward. When installing springs the tips should point to the center of the seat. Spacing between spring tops should not be less than 1 1/2 in., between spring tops and rails not

less than 2 in. Springs usually are tied in straight rows. Make chalk marks on webbing or plywood to indicate spring positions before fastening them. Springs are fastened to webbing with upholsterer's stitching twine, Fig. 14.

There are two spring-tying methods, the two-way, Fig. 18, and the four-way, Fig. 19. The first makes the most resilient seat, the latter the most durable one. Seats are either rounded or flat, Figs. 20 and 21. Spring twine is used for tying; cut lengths with plenty to spare for each row and start tying the center front-to-back row. Knot one end of the twine to a No. 8 or 12 tack driven partly into the rear rail, Fig. 22, then drive the tack down to hold the knot. Next, loop the twine around the top coil of each spring in two places, Fig. 23, pull the twine taut, then knot it to a tack on the front rail. Avoid more than a slight compression of the springs so the twine is not under too much strain. In rounded-top seats edge springs are under most compression, as the top coils are pulled down toward the rail. Where twine ends are under some strain, drive an extra tack so its head overlaps that of the first.

When all front-to-back twines have been installed, slip the springs to adjust them in position. Then, tie the cross twines, again starting with the center row. After anchoring the twine to one rail, tie a clove hitch at each point where the twine

Continued on page 67



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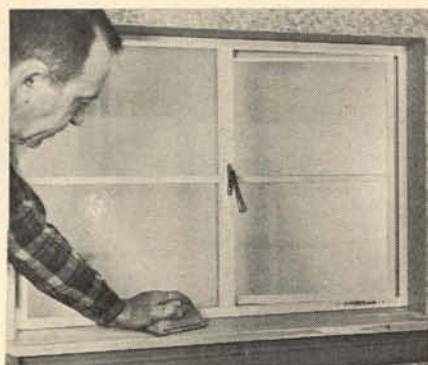
1. Neat, easy to clean, water and weatherproof, window sill no longer is a problem, maintenance eliminated.

Most window sills require frequent maintenance because they are exposed to sun, rain and weather, and when closed windows keep out the elements, leaking potted plants and other hazards take their toll. The solution to the problem is to cover the sills with plastic laminate, as used on kitchen counters, table tops and for similar applications.

First, let us state that what normally is called a window sill, (we are calling it that in this article), technically is the "stool". The window sill is the slanting portion of the window frame outside the house.

To apply laminate to a sill, first carefully sand it to remove any loose paint, paint blisters or other irregularities, Fig. 2. Then carefully measure the sill; if it varies in width or is of irregular shape, make a pattern, Fig. 3. Plastic laminate can be cut with a backsaw, Fig. 4, or a table saw, Fig. 5. Hold it firmly and use a sharp blade to prevent chipping. You may have scraps of laminate left from a job, or odd pieces may be purchased at reasonable cost from cabinet shops or building-supply dealers.

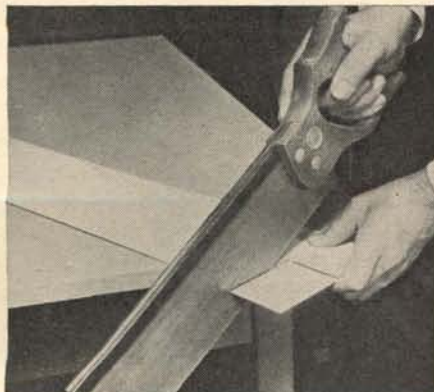
Apply the laminate with a contact adhesive. The cement can be applied with a trowel or brush, then is allowed to set until it is dry, Fig. 6. The laminate covering, which has been test-fitted before the adhesive was applied, now is coated with adhesive and it is accurately positioned and fitted on the sill, Fig. 7.



2. First step is to remove hardware, sand all surfaces to smooth paint, remove any irregularities.



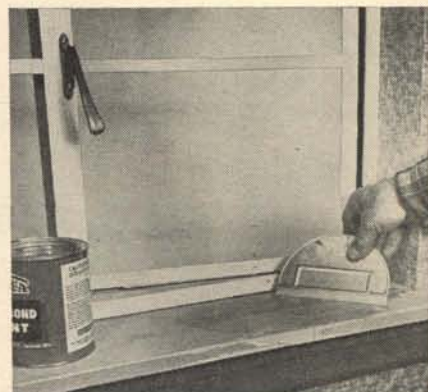
3. Second step is to make accurate pattern of sill, double-check measurements as width of sill may vary.



4. Backsaw is ideal to cut plastic laminate, as it makes straight-line cut, has fine teeth that will cut easily.



5. Plastic laminate also can be cut on table or radial-arm saw. Blade must be sharp, work held to prevent splintering.



6. Contact adhesive is used to apply laminate; it can be troweled or brushed on sill, then allowed to dry.

A block of wood is tapped with a hammer over the surface of the laminate to assure that the adhesion of the cement is complete, Fig. 8. The slight overhang, (cut the laminate slightly oversize), now is filed down, Fig. 9, and the edge rounded. $\Delta \Delta$



7. Laminate must be positioned carefully, then fitted onto surface in exact position; adhesive bonds immediately.



8. Block of wood is tapped over full surface of the laminate to assure that it bonds at every point, on each edge.



9. After tapping laminate into complete contact, overlapping edges are trimmed to fit with file, rounded over.

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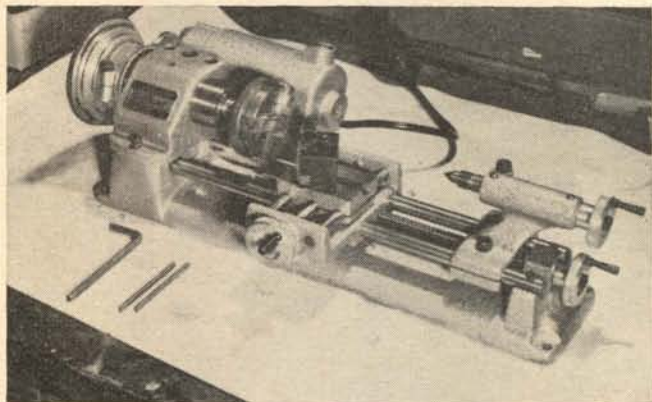
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City _____ Zone _____ State _____

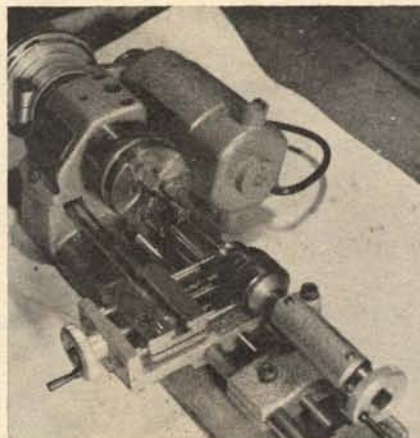


Miniature Lathe

A complete lathe in miniature, Unimat also is multipurpose tool when fitted with optional accessories available.



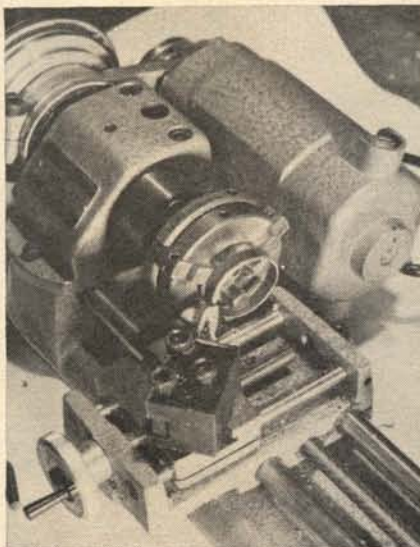
Precise drilling with even very small drill bits is no problem with Unimat; it will drill with accuracy of thousandths of an inch.



One of the most interesting power tools we have ever tested in the Model Shop is the Unimat. This miniature lathe will do everything a big lathe will do, scaled down in size, of course, utilizing standard 1/4-in. tool bits that are used with the big machines. Standard equipment is a 3-jaw universal chuck and a Jacobs-type chuck. With these two jaws you can do metal turning and accurate drilling. Various speeds are possible with a multi-pulley arrangement, and even the smallest drill bit, down to No. 80 size, can be used with little chance of breakage. A faceplate in the standard package permits turning work between centers, using a lathe dog that also is provided. A column provided in the kit permits changing the lathe to a vertical drill press and the cross slide is designed to hold the 3-jaw chuck so it can be used as an accurate and positive vise.

Our one criticism would be the drive belts for the machine, two of which are used. They are fairly soft rubber and do not seem to be too rugged. We recommend that you buy a couple of spare sets of belts when you purchase the machine. Belts, as well as all spare parts are readily available for the lathe.

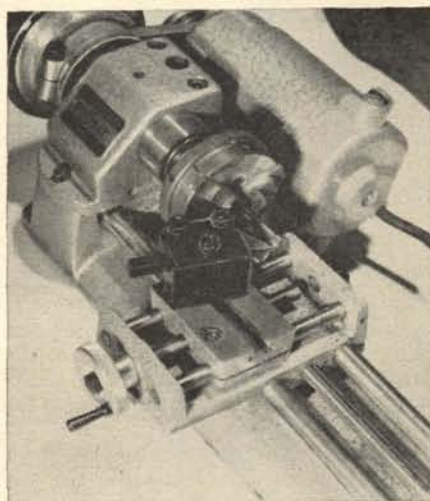
Available optional accessories for the Unimat change it to a tiny table saw, a jig saw, a milling machine, grinder and buffer. The basic unit comes in a wooden case that can be picked up and carried like a small suitcase. A beautiful little tool. For free catalog: American-Edelstaal, Inc., 350 Broadway, New York 13. △ △



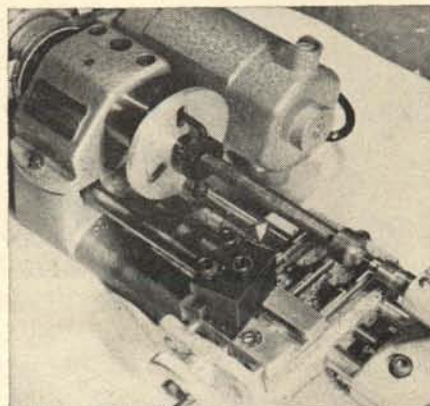
Work can be held inside or outside jaws of 3-jaw chuck. Jaws also can be removed and reversed.



Column provided as standard equipment converts machine to vertical drill press. 3-jaw chuck fits on tool holder.



Standard-size 1/4-in. tool bits fit tool holder, so lathe can be fitted with an infinite variety of cutting bits.



Faceplate is standard equipment, permits turning work between centers by means of dog that clamps on work.



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5 tubes, 3 diodes, silicon rect.



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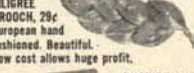
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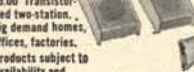
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Action Compares with Costly Slides
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Nail "N" on rail at drawer opening.
If drawer has center guide, nail third Roll-eez "N" on top of back in the middle, Roll-eez "M" on bottom straddling guide.

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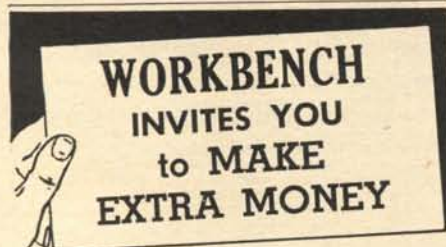
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WORKBENCH

Women's Page

TILE-TOP TABLE



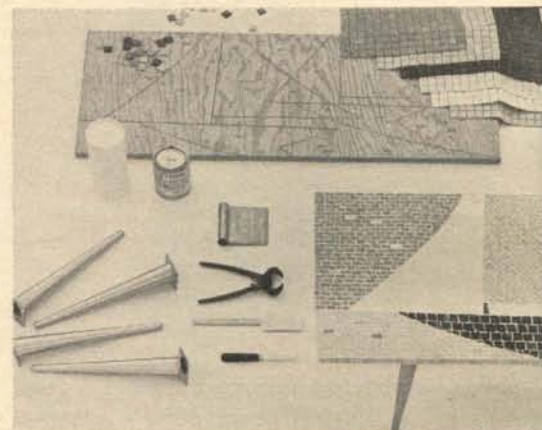
Tile-topped table is attractive in any setting, can be made at reasonable cost and in almost any size.

If cost has prevented you from having a beautiful tile-topped coffee table in your home, here is the solution to your problem. You need not even saw a board; have the lumber dealer cut a piece of 3/4-in. plywood or particle board to the size and shape you want. Friend husband could help here. Legs for the table are purchased ready-made, and can be wood or metal. They have their own attaching brackets that are fastened to the underside of the table with wood screws. If the table is to be more than 3 ft. long, use a double thick-

ness of plywood, driving screws up through the bottom piece. On the single-thickness tables glue and screw two strips of wood to the underside of the top for reinforcing. Attach the legs, then draw the pattern for your tile "picture."

All the tiles need not be the same size, but the background usually is made of 1 x 1-in. tiles. Tiles 1 x 2 in. and 2 x 2 in. can be inserted, as shown in the photos. Pre-assembled patterns and figures also can be purchased. If you do not have a local source for tile, several of our advertisers who

To make your own table you need plywood, tiles, adhesive, grout and legs, plus a few simple tools.

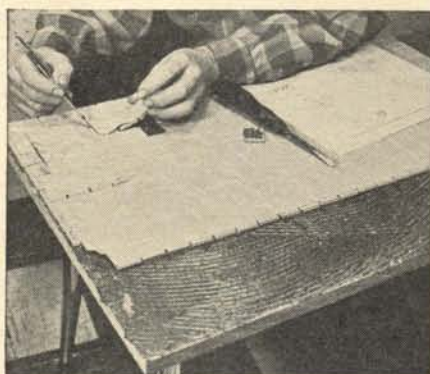




Plywood, (or particle board here), is sealed with shellac, then adhesive for tiles is applied with trowel.

handle craftsmen's supplies also have extensive lines of tile and accessories.

Apply a coat of shellac to seal the wood, then apply the tile mastic. Fit on your tiles. Those shown come with paper on the face that must be removed, others have a net backing, designed so the mastic goes through the backing and contacts the tile. When the adhesive



Small tiles are used for background. Inserting pattern requires careful removal of tiles from full sheets.



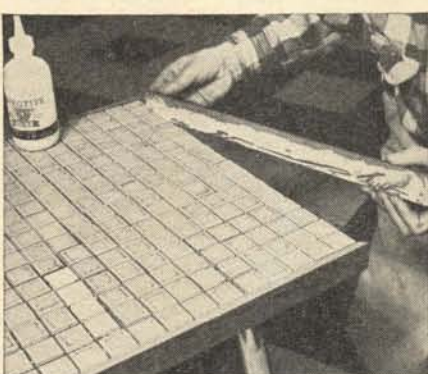
When tiles are set-in they must be positioned so there is grout line all around. Use toothpicks as spacers.

is set, glue on the trim strips then apply the grout. Remove excess grout with a squeegee or damp sponge. When the grout is almost dry, use a dry cloth to remove grout dust and to polish the tiles.

It is best to pre-finish the trim strips, and they should be wide enough to cover the thickness of the table top and the top edges should be flush with the upper surfaces of the tile. $\Delta \Delta$



After adhesive has set 24 hrs. remove paper by wetting it with sponge, then peeling it from the surface.



Before grouting apply trim strips to edge of plywood, with upper edges flush with tops of the tiles.



Grout is rubbed into joints, then excess is removed with squeegee or damp sponge. When dry, tiles are polished.

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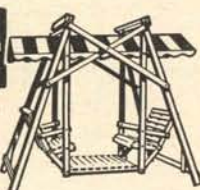
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TABLE which quickly converts
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BENCH. Both fold flat and are
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Mastercraft Plans, Dept. 922B
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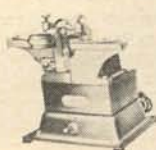


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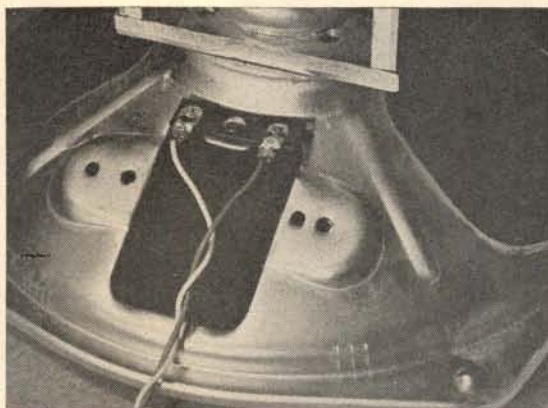
Electro 101-B BAND SAW BLADE BRAZER . . .

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110-20v. 50-60 cycle. Furnished complete with Silver Alloy and Flux Kit.

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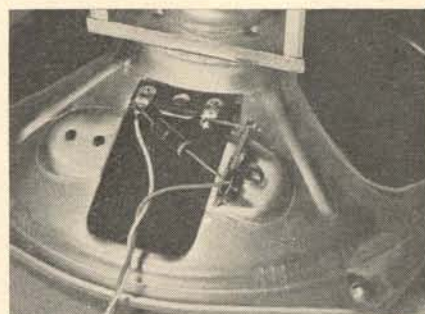
TV-Commercial "Eliminator"



1. Speaker in a television set will look something like this, with two wires running to it. Transformer may be directly on the speaker.

Some television commercials have improved to the point where they are interesting, amusing or entertaining, but many are still a rush of too-loud sounds that are irritating. You can reduce your irritation and keep the house quieter by installing a commercial "silencer" that will cost just a few dollars and about an hour of your time. Before starting the project we suggest measuring the distance from the television set to your favorite easy chair, or to the location from which you want to control the sound of the set. The parts list at the end of this article shows a 25-ft. length of cable; this should be long enough to reach most points in the average room, but you may want to lead it behind furniture or along the wall, and this distance may be more than 25 ft.

The first step is to unplug the television set and remove the back. Use a long-blade screw driver with an insulated handle to "short" each tube, (including the picture tube), in the area of the speaker. To do this, touch the blade of the driver to the metal chassis of the set and to the tube envelope at the same time. This will "unload" any capacitors that still have an electrical

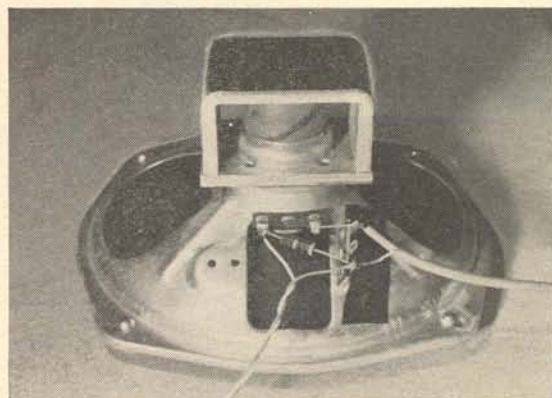


2. Wire disconnected from speaker is soldered to terminal-strip lug. Resistor goes between terminal and speaker.

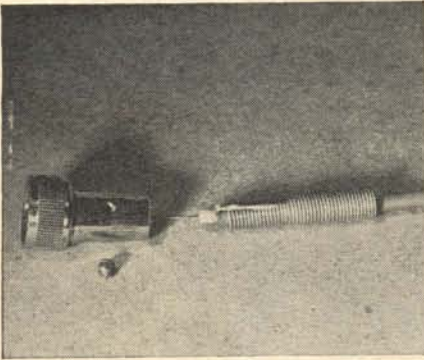
charge. New television sets no longer use "brute voltage" as did the older models, but you still can get a painful, and possibly dangerous shock from a charged capacitor.

Most TV sets will have a speaker with two wires leading to it, as in Fig. 1. Some old sets may have an electro-magnetic speaker that will have four or more wires leading to it; we do not recommend the installation of our Commercial eliminator on such speakers without technical assistance. Your set may have a transformer mounted di-

3. Speaker wiring is complete here. Terminal strip is fastened to speaker frame with self-tapping screw. Note short wire from strip to the speaker connection.



WOODWORKERS



4. Braid on shielded cable is twisted, bent back on spring. Cable is fitted in connector, held with setscrew on wire.

rectly on the speaker; you will work only with the two wires going from the transformer to the speaker. Disconnect one of the wires soldered to the speaker terminal and connect this wire to the bottom lug on the new terminal strip fastened to the speaker frame, Fig. 2.

Now, solder-connect a new 10-ohm, 1-watt resistor between the bottom lug on the terminal and the speaker terminal on which a wire is still connected, Fig. 2. Next, solder a new short wire between the empty speaker terminal and the top lug on the terminal strip; this also is shown in Fig. 2.

Route the control wire through a convenient opening in the bottom of the television cabinet and pull enough through to reach the speaker.

Strip off about 1 in. of the outside plastic insulation and twist the braided shielding wire. Then, carefully strip back about 1/4 in. of the insulation on the center wire. Do not cut too deeply into the insulation as the fine strands of the center wire are cut easily. Solder this center wire to the top lug of the terminal strip, and solder the twisted shield wire to the bottom lug, as shown in Fig. 3.

Remove the spring from the Am-

Continued on Page 63



5. "Mike" switch is pressed to silence speaker of television set, released to restore sound.

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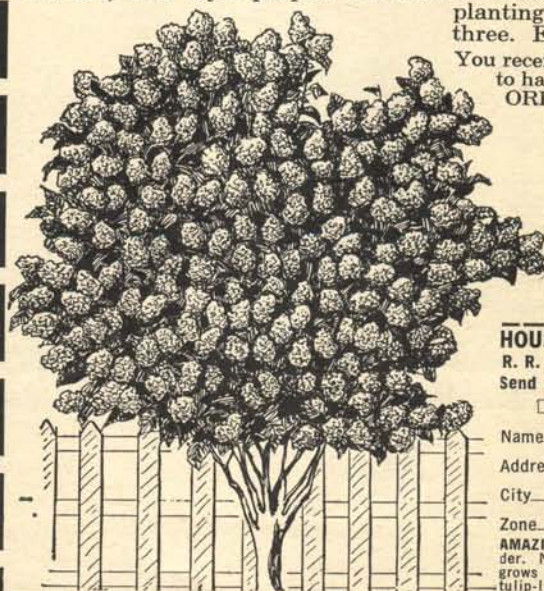
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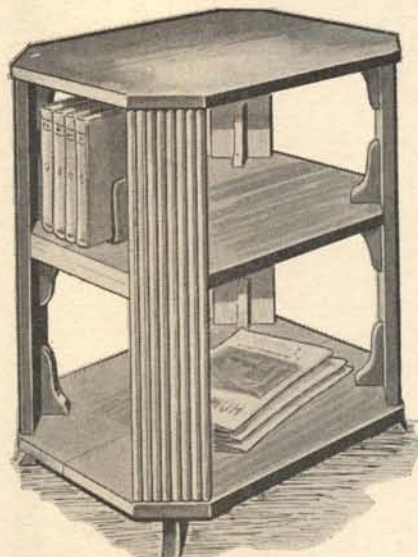
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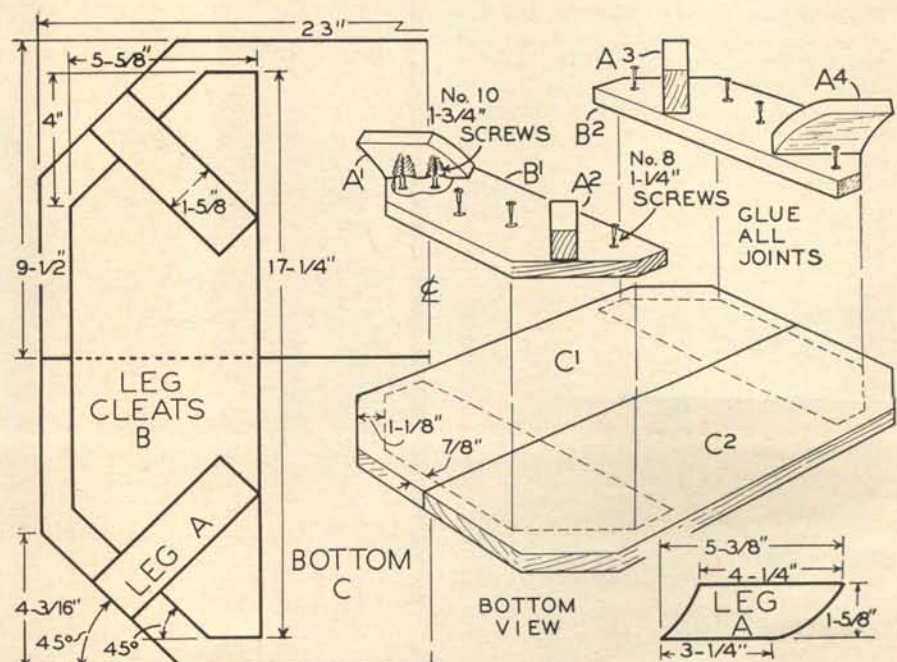
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MATERIALS LIST

- 2 x 2 Solid stock
- A, Legs, 5 3/8", 4 req'd.
- 1-in. Solid stock, or 3/4-in. Plywood
- B, Leg cleats, 5 5/8" x 17 1/4", 2 req'd.
- C, Lower shelf, 9 1/2" x 23", 2 req'd., (or 19" x 23" plywood)
- D, Posts, 5 5/8" x 22 1/4", 4 req'd.
- E, Brackets, 2 1/2" x 4", 16 req'd.
- F, Center shelf, 8 5/8" x 21 1/4", 2 req'd., (or 17 1/4" x 21 1/4" plywood)
- G, Shelf cleats, 1 3/4" x 12 5/8", 2 req'd. (not with plywood)
- H, Top, same as lower shelf
- I, Top cleats, same as shelf cleats, (not needed with plywood)
- J, 3/4" Half-round molding
- J, "Reeding", 22 1/4", 32 req'd.

Books can be fitted on all four sides of this handy piece of furniture, and even the largest of magazines will fit on the lower shelf. The top is fine for a lamp, and there still will be plenty of room for smoking supplies or decorative accessories.

Hand tools can be used for construction of the unit; there are no fancy joints. The "reeded" look of the legs is created by gluing and bradding strips of half-round molding to them. Fit eight strips of the molding on a leg to determine if the molding requires slight sanding to narrow it so the strips will fit, or if the strips need to be spaced



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Copper Planter

An Interesting "Soft-Metal" Project



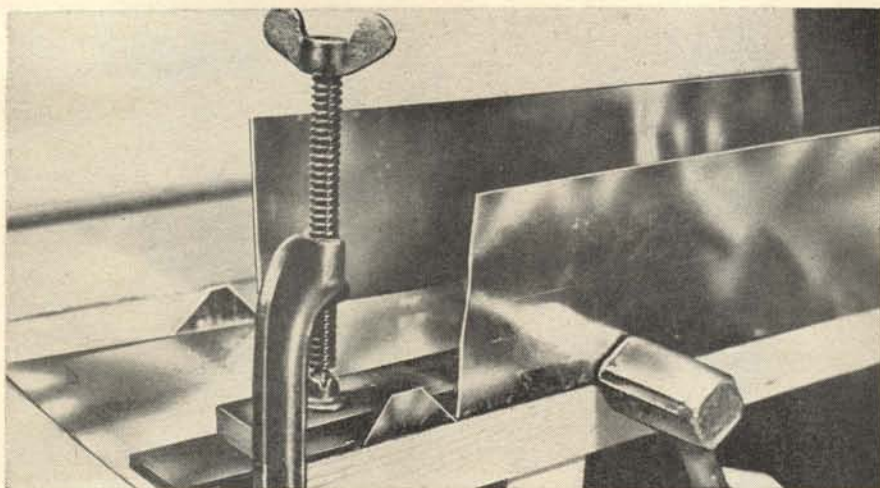
Copper planter can be used simply as a holder for a number of potted plants, and placed on a window sill or convenient table. For a more "built-in" look cut an opening in a table and recess the container.



Clean, shiny surface of the soft copper is marked easily, no bluing is required as with galvanized steel.

Watertight containers are required for the built-in planters so popular in modern homes. If you build a room divider or other unit in which a planter is to be included, build a container to fit from sheet copper. This metal is resistant to water and the various plant-food solutions fed to indoor plants.

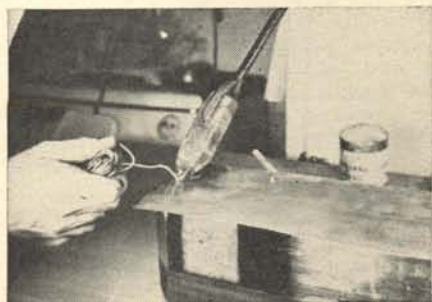
Get copper no heavier than 26 ga. If you wish to roll the edge, as with the planter shown, allow 2½ in. additional metal all around, as indicated on the drawing. Figure the required dimensions for the container you are making, then use an awl or ice pick to scribe the lines. Allow flanges for soldering. Cut the metal with snips, then improvise a metal brake with wood or metal and clamp the copper to the bench. Bend the metal up with your hand, then use a mallet to square the bend. Solder the flanges to assure watertightness, then slip a slotted dowel over the upper edges of the



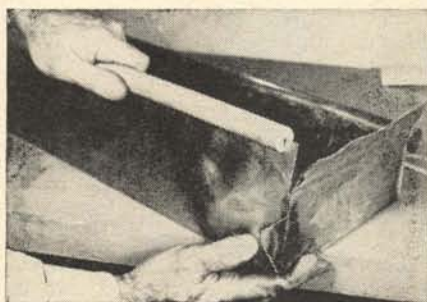
Soft copper is bent easily, but to get a straight bend, improvise a metal brake. Use steel flats or 2 x 4s to clamp the metal to a workbench, then bend metal up against them. Use care as copper dents easily.

box and roll the metal, if a roll is to be included in your design. Make the rolls on the longer sides of the container first, then you can cut down the dowel to fit the shorter

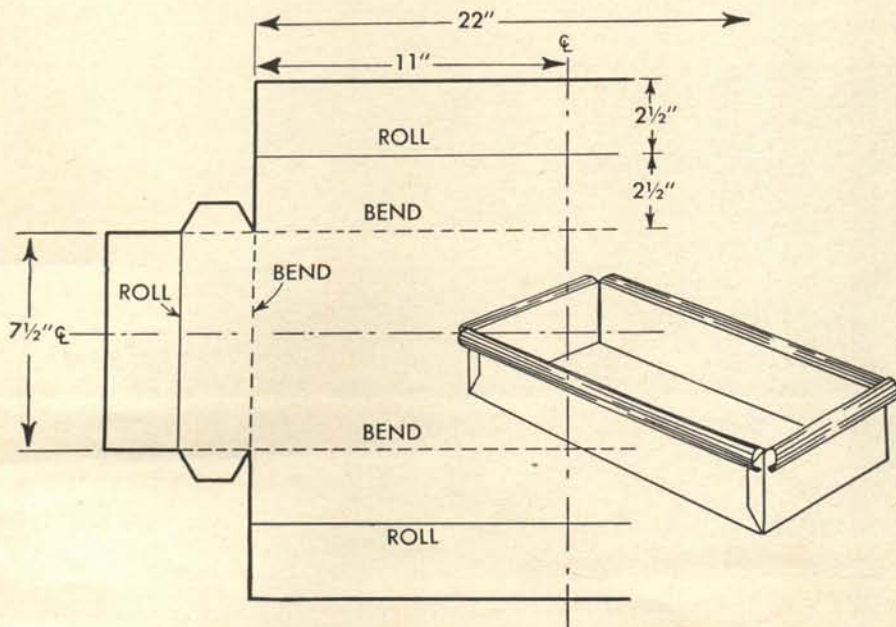
sides. Be sure the slot in the dowel is wide enough so that the dowel can be slipped off the metal after the roll is made. Sand the dowel smooth after the slot is cut. $\Delta \Delta$



Clean copper presents few problems in soldering. Use a large iron, however, as metal rapidly dissipates heat. Propane torch does a good job.



Roll is made on upper edges of planter by using dowel slotted on saw. After roll is made, dowel is simply slipped out of the roll sideways.



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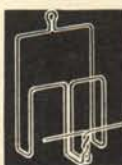
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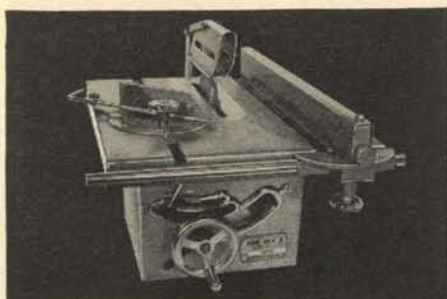
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Refinishing Clinic

What to do with Driftwood

Part II

Continuing from the last issue with the treatment of driftwood before it is finished, we suggest sandblasting. This is done with sand or fine steel shot under high air pressure. Sandblasting services are available from monument dealers and contractors specializing in masonry renovations. The charge usually is based on an hourly fee. Sandblasting is particularly good where it is necessary to clean intricate contours. Softer driftwoods are roughed up by blasting, and it is necessary to sand lightly afterwards.

Wire-brushing is another way to clean driftwood; the results being similar to sandblasting but not quite as severe. Use a power brush where possible, using a hand brush for difficult-to-reach spots.

Trimming and cutting should be planned carefully. When a cut is made simply to sever the wanted part from its base or trunk, a straight saw cut is sufficient. When unwanted projections are removed, it usually looks best to disguise the cut end to look like other termina-



Even a complete driftwood "tree" can be used. This one was drilled, wired for MOE lights made by Thomas Industries.

tions. For example, if a branch is removed, round off the stub to make it look like a gnarled bump. If other ends of the piece are jagged, make a jagged saw cut to match.

Finishing methods depend on how and where the driftwood will be used. If in doubt, test a finish on a hidden part of the piece before starting the entire project.

Natural oil finishing is the simplest method. If you take the time, hand applications of repeated coats of linseed oil worked into the surface will impart a deep, rich luster. A quick process that results in approximately the same appearance calls for using two coats of Deep Finish Firzite, applied as per the manufacturer's instructions.



A rare find, this complete driftwood stump was inverted to make a free-form coffee table. Trimmed stump roots support top, with grill to show roots.

A completely natural finish is difficult to attain. However, the least darkening of the finish will occur if the wood is sealed with white shellac, or a material like Satinlac Lightener. The shellac sealer can be protected with clear varnish, satin or gloss finish. Satinlac Lightener is best covered with a final coat of Satinlac. (Satinlac and Firzite are Weldwood products made by U. S. Plywood.)

A slightly darker finish with a satin sheen is accomplished by applying two coats of satin-finish polyurethane "varnish" such as Rez Super Satinwood. Lighter-than-natural finishes are possible by applying a material such as White Rez. Driftwood tones can be returned to sanded pieces by using a driftwood-tone stain.

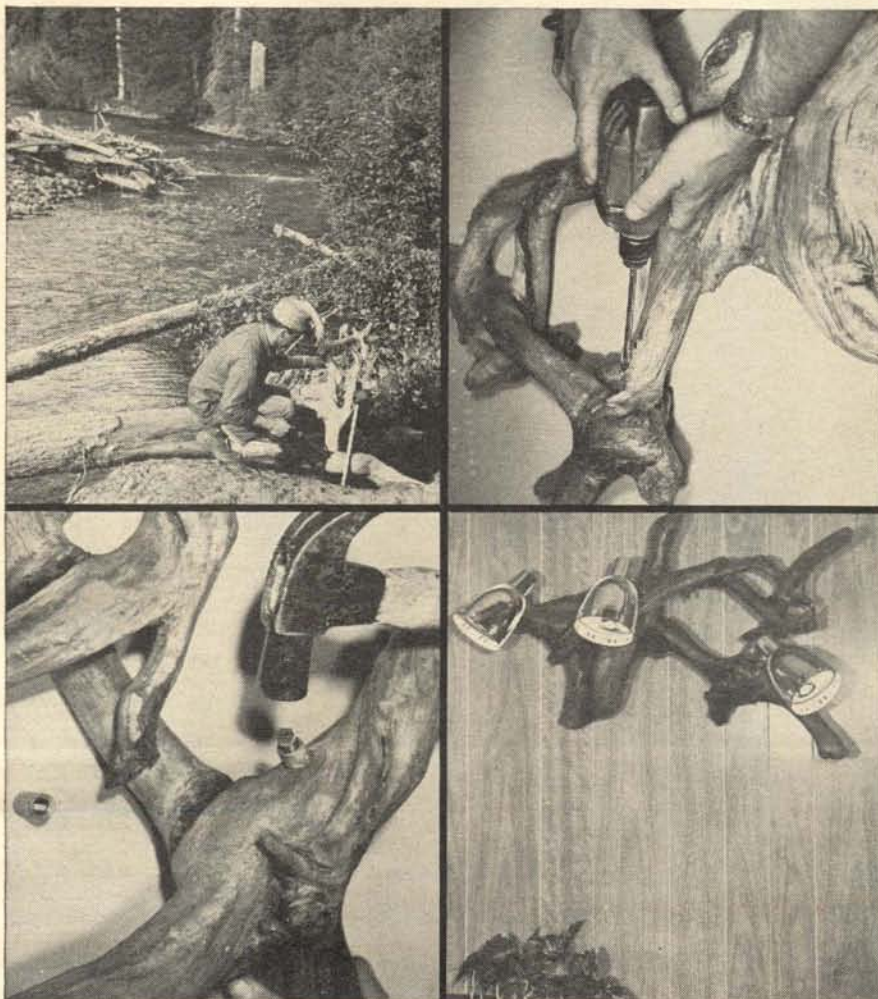
Any desired darker color can be applied by using regular stains. Use varnish or polyurethane to finish. Hide the trimmed areas and sanded spots by dabbing an appro-

priate shade of stain on the areas to match the over-all character of the piece. Metallic finishes of bronze, gold, aluminum or copper can be applied from spray cans. For an antique-metallic finish, spray a light coat of flat black over the dry metallic paint, then quickly wipe the black off the high spots. For an antique-white finish, start with a coat of white. When dry, apply a sparing coat of white tinted with yellow. Allow to dry, then use a brass brush to wear away the yellow-tinted paint from the high spots.

Exterior finishes are required for pieces that will be used outside. Use good-quality exterior paints or varnishes, observing the general suggestions for toning already described.

(The plastic pellets described in Part I of this article are available from most hobby shops, and from mail-order houses that sell craft and hobby supplies.) △ △

Keep saw handy to trim wood on the spot. Wall lamp was made from this piece of driftwood, holes drilled with power bit. Fixtures are fitted in 1/8-in. pipe couplings driven into holes, held with epoxy adhesive. Insulated staples hold wire on back of wall lamp. Bullet fixtures are MOE lamps from Thomas.



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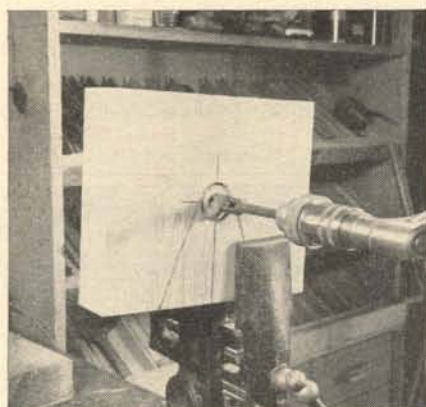
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Five-Board Bench

Attractive little bench is fine project for the beginning craftsman, or a one-evening exercise for a more advanced woodworker.



V-notch in legs is made by first drilling $1\frac{1}{2}$ -in. hole, then cutting to hole with saw. Block prevents splintering.



Rasp is used to assure "hand-hewn" look. Keep smoothing irregular, then sand carefully to give aged look.

R. J. DeCRISTOFORO

(Hand-Tool Project)

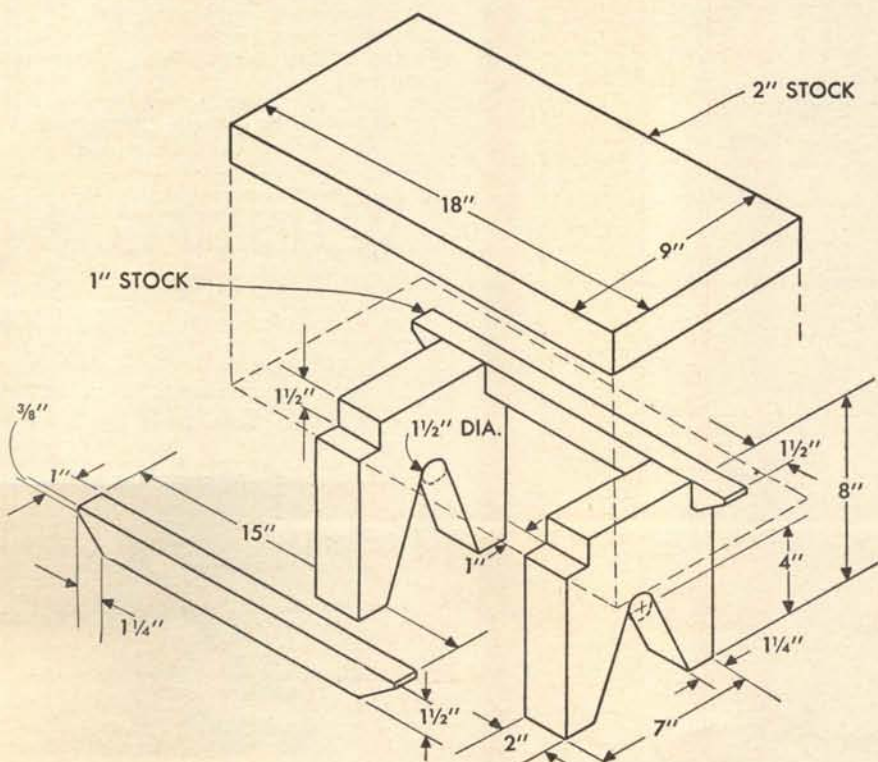
The five-board bench is a perennial favorite, but this one is unusual in that the finished project has a rough-hewn look not normally considered for this item.

The secret is in using 2-in. stock and working over the individual parts with a wood rasp. All corners and sharp edges are eliminated; surfaces are "antiqued" by denting them in an irregular pattern with a hammer. (Just light taps for making dents.)

It's best to make the legs first, cutting them to over-all size, then drilling a hole at the point of the V-notch. Cut to the hole to make the V-notches. Next, make notches at the corners of the legs to accept the side rails. Now cut the rails and the seat and work them over to produce the "antique" look.

Start assembly by using glue and 2-in. finishing nails to attach the rails to the legs. Attach the seat by nailing through the rails and into the seat; this prevents having any nails show on the surface of the seat.

Redwood was used for the original bench, but knotty pine, maple or birch could be used. The softer woods are easier to "antique." A genuine antique has a smooth finish that only time can create. To closely duplicate this finish use progressively finer grits of sandpaper on all surfaces and edges until the wood is glass-smooth. Finally, apply a clear sealer or wash coat of shellac, (50-50 shellac and alcohol), then apply a coat of paste wax and buff. $\Delta \Delta$



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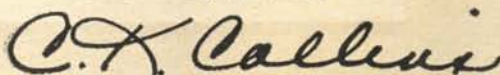
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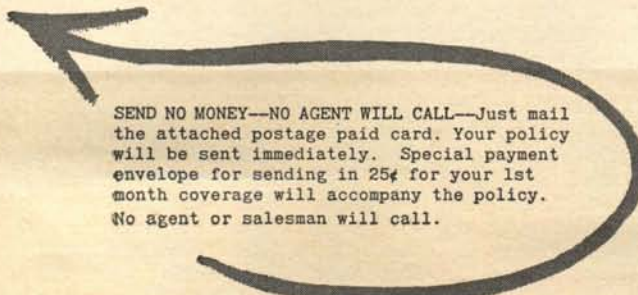
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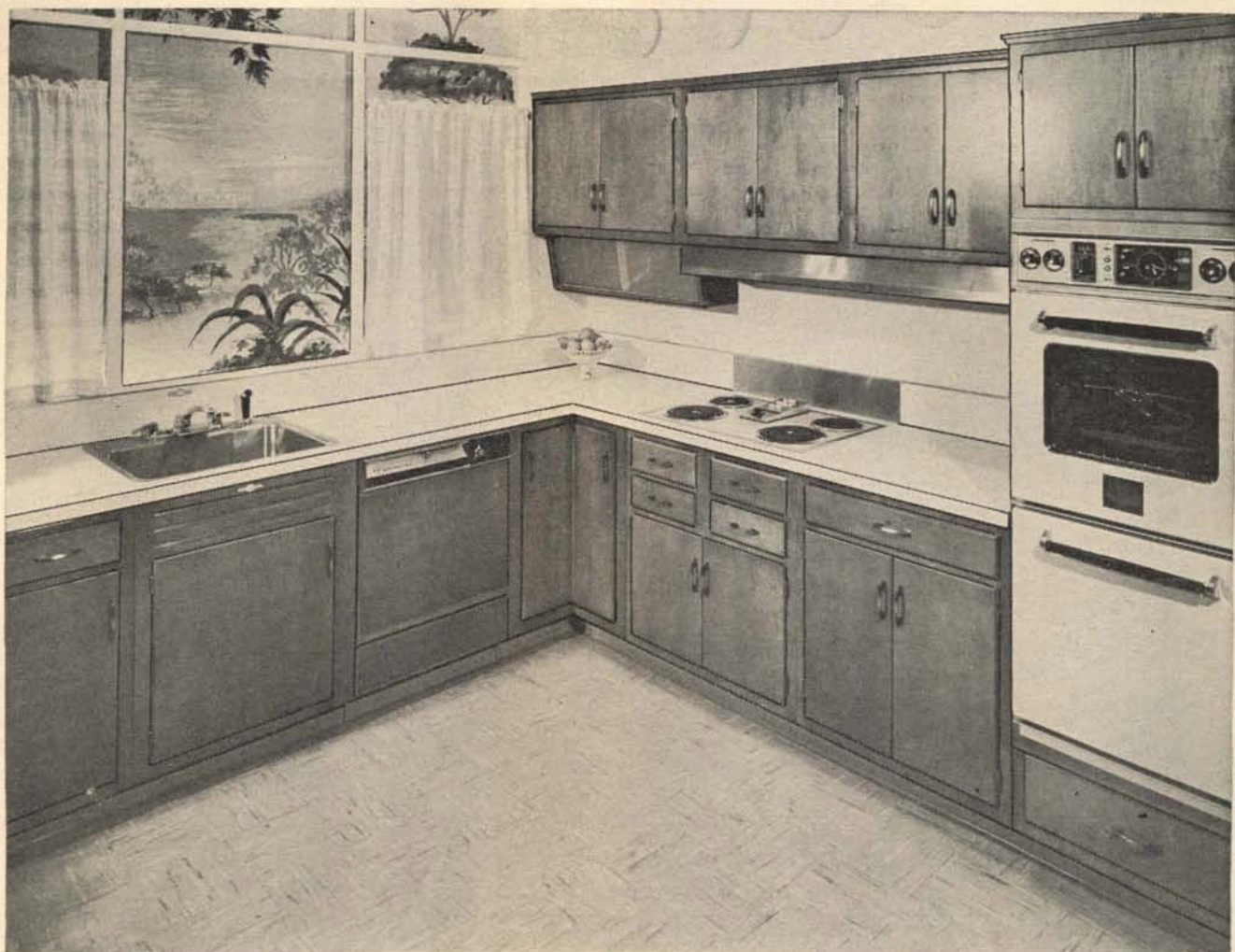


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BUILDING KITCHEN CABINETS

RALPH TREVES

Connecting Kitchen Utilities

PART X

When you install the new sink, range and oven in the cabinets and counters you have built, it will be necessary to change plumbing, wiring and gas lines (if you choose a gas range and oven), to accommodate the new appliances. Locations for the utilities can be determined by checking the specification sheets that come with the appliances.

First of all, if the sink is to be relocated, determine if a soil pipe for the drain is handy. If a new drain line to the soil pipe is required make sure you can get the required drop in the line, and that you can connect to the soil pipe. If you have had no experience in calking and leading the joints in soil pipe, better have a professional plumber make that connection.

In the example shown, the old

drain for the sink was utilized, Fig. 1. However the drain pipes back to the connection in the wall were removed and replaced by nipples and elbows, Fig. 4, which relocated the drain to the sink. Note that with the use of two elbows, as in Fig. 4, that you have a "swing" joint. The drain will swing in an arc on the vertical connections of the new elbows, and also in a vertical arc. Such a swing joint can be adjusted to allow for considerable misalignment in the piping. The drains must be fitted more accurately if a garbage disposal unit is installed, and if a two-basin sink is used.

In any case, be as accurate as possible with all piping. Working in a confined area, as under the sink, Figs. 3 and 4, is difficult at best; misaligned piping makes it that

much more troublesome. Lines for hot and cold water are brought up through the floor, Fig. 2, and fitted with shut-off valves. These valves too often are not included in an original installation, which means you have to shut off the water in the basement to do even a minor repair, such as changing a faucet washer. With shut-off valves under the sink, you cut off water in no other part of the house; you do not even disturb the other faucet in the sink. You do have to shut off the main valve when installing the piping for the sink, but the moment you have the valves in place you can turn it back on, then complete the job at your leisure. Adapter tubing and slip-nut fittings are used to connect the faucets to the valves in the water lines, Fig. 2. The

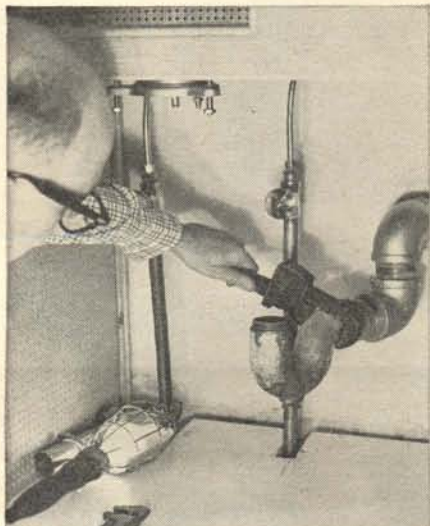


1. Hot and cold-water pipes come up through the floor, extend about 18 in. Handy shut-off valves are installed.

tubing is flexible enough to permit some bending to accommodate misalignment, Fig. 3.

If you install a gas oven and range the line brought up through the floor must be fitted with a "T" so that lines can be run to both appliances, Fig. 5. If there is no valve in the line (there was one in the example shown), install one where it can be reached easily after the cabinets are in place. The main valve will have to be shut off, of course, while installing the valve, but you can turn the gas back on again as soon as it is in place. This means your hot water tank, clothes drier and other gas-fired appliances need be out of commission for only a short time.

To permit connecting your gas-fueled table-top range, then fitting it in place, a flexible tubing is used. A pipe-to-tubing adapter is fitted on the pipe, Fig. 6, to permit connecting the tubing, Fig. 9. Make sure the flexible tubing has the



4. Remove drain trap temporarily until sink is in place. In this case, disposal unit is attached to sink, then to trap.



2. After sink cabinet is in place, connections are made to the faucets with adapter tubing and slip nuts.



3. Working in close quarters is easier if pipes are properly aligned. Faucet tubing can be bent to fit if necessary.

AGA (American Gas Association), label.

Determine the point at which the gas oven is to be connected and



5. Gas pipe is cut to a size that permits installing T-fitting for second line to built-in oven next to range.

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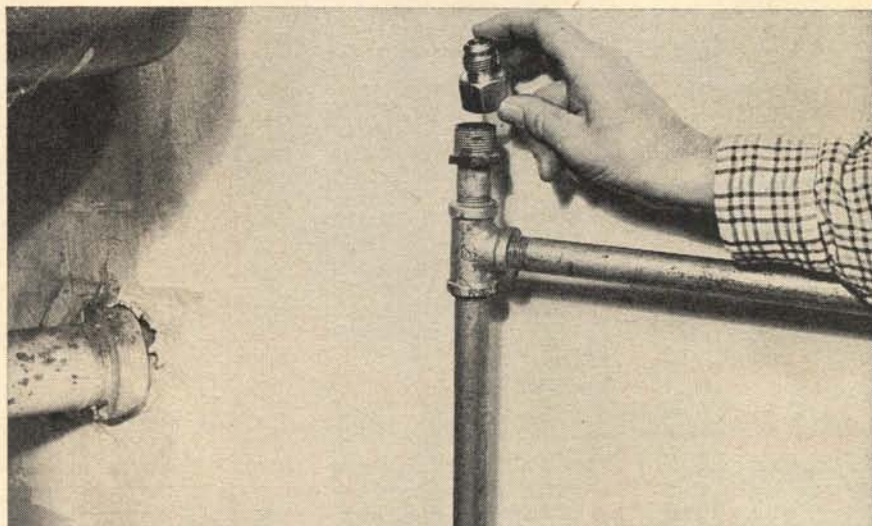
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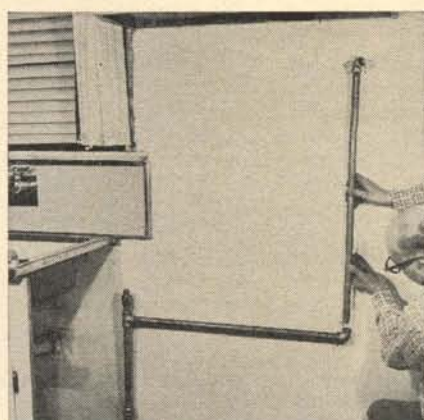
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6. Special adapter is fitted on the gas pipe to accept flexible tubing. Tubing and fitting can be purchased from plumbing-supply outlets.



7. When piping up to the oven measure length of pipe required, including thread length, mark location on wall.



8. Actually position pipe and fittings in place to avoid error in location of fittings that align with oven connections.

mark it on the wall, Fig. 7. Run your piping to this point. Using the actual pipe and fittings for measuring will assure accuracy in locating the connection, Fig. 8.

Even for a gas range an electrical connection is required, as there are lights, timers and other electrically-powered accessories. Wiring also is

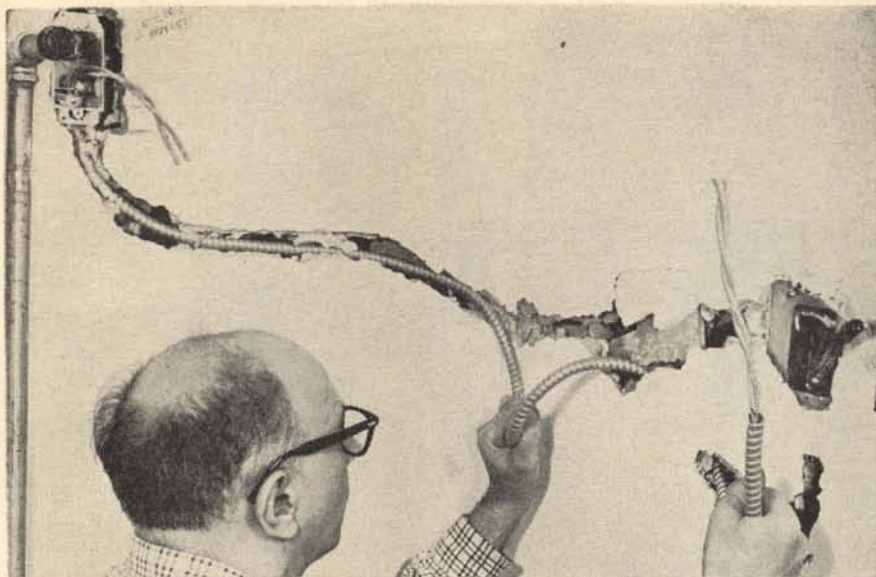
required for an automatic dishwasher and for a disposal. In some cases it will be necessary to drill through the floor, Fig. 10, and bring the wires up under the units. In other situations you might be able to hook into an existing box. Chopping grooves in the plaster or plasterboard, Fig. 11, permits running



9. Be careful when tightening gas connections so fittings are not cracked. Check lines with soapy water.



10. For connecting dishwasher or other appliances, drill through floor, bring wiring up behind appliance.



11. Separate receptacles are provided for oven and for fan in range hood. For electric oven 220-volt line would be required, it also supplies 110 volts.

the wire over to locations for the range, dishwasher and disposal. The wire is stapled to the studs, then the grooves are plastered over to smooth the wall. In most situations the patched area will be hidden behind the appliances, so the patching is only to seal the wall against insects and dirt. If the wall is an outside one, be careful when chopping the grooves not to damage the insulation. A duplex receptacle is installed behind the oven, Fig. 12, so the oven accessories can be connected, and a spare connection is available if an exhaust fan is installed. A receptacle is fitted behind the range and under the sink, the latter for the disposal unit.

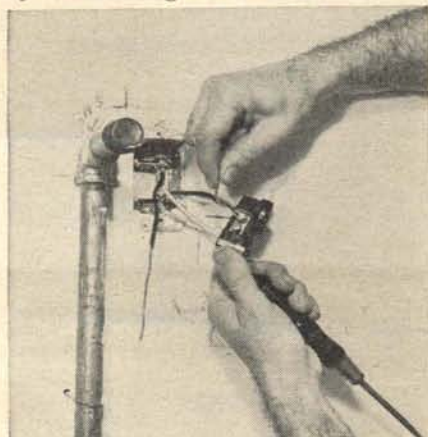
If an electric range and oven are to be installed, heavy wiring to handle the required 220 volts must be brought to the location. It usually is not necessary to bring a separate 110-volt circuit to the location, as the lower voltage can be obtained by connecting to one of the two

"hot" wires and to the neutral wire of the 220-volt, three-wire system.

In all cases, make sure that your work meets local ordinances, and that you obtain the required permits and inspection certificates. This is a simple matter in most communities, involving merely the filing of declarations and rough sketches showing the work to be done. Some communities do require that any plumbing work be done only by licensed plumbers. Other cities and towns make this requirement also for all electrical work. In the latter case wiring is restricted to a specific type, such as wires run in conduit, or metal-sheathed wiring. If the work must be done by a professional plumber and electrician, you still save considerable cost by having all preliminary work ready.

In the matter of a kitchen exhaust fan: If you can locate it on an outside wall you will save a lot of time, work and money. The duct for the fan can be run directly through the wall; it will be short and eliminate the problem of grease collecting in the ductwork and posing a potential fire hazard. If you must run up through the ceiling, run the duct up through the roof, fitting on the necessary rain cap. Do not exhaust a kitchen fan into an attic, as this is asking for trouble should a fire start in the ductwork. It also forces kitchen cooking odors into the attic, from where they are dispersed throughout the house.

Every kitchen will present different problems; we have shown only some general ideas and described how to plan for the "roughing-in" of the various items of plumbing and wiring. $\Delta \Delta$



12. Gas and electric lines here are located for the built-in gas oven. Specifications sheet gives location.

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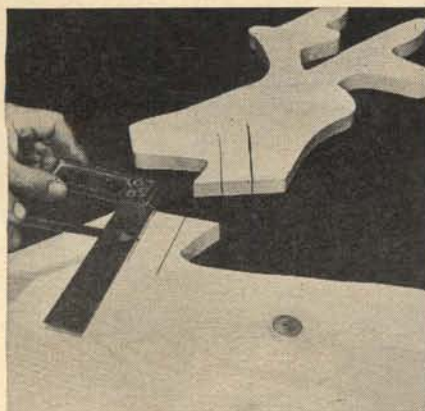


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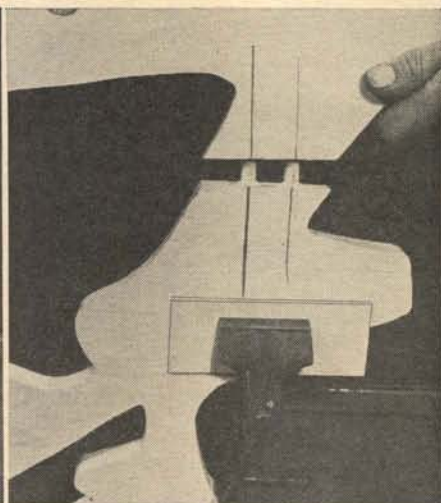
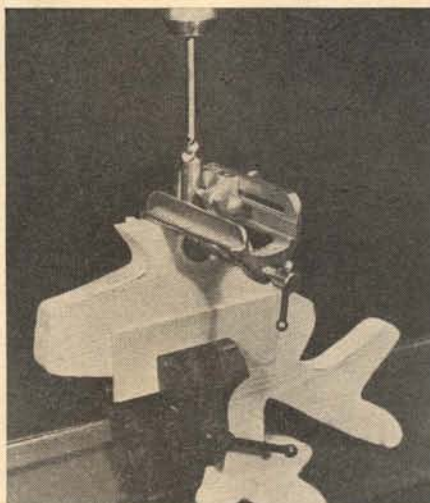
Tricks of Doweling



1. Head of deer cutout was doweled to assure strong joint. Note that lines run over the edges of the stock.

2. Stanley Doweling Jig assures drilling of holes accurately, so all dowels fit precisely, stock faces are flush.

3. Workpieces are tapped together, doweled joint is strong, resistant to side thrust and pulling apart.



For many workshop projects the use of dowels is the quickest, most efficient method of making joints. Dowels produce a strong joint, they do not split the wood as some metal fasteners do, and can even be used as decorative accents. The normal light color of dowels will stand out against dark woods, while in light wood the dowel ends can be stained dark. We are describing "open" dowels, of course; blind doweling completely hides the dowels.

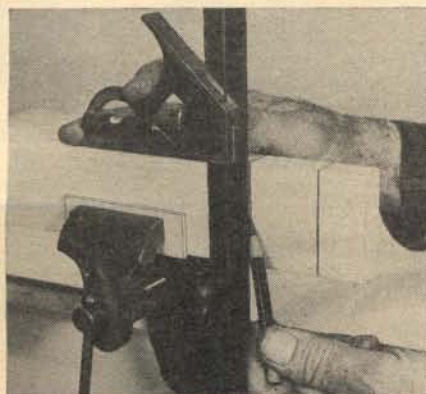
Jointing with dowels requires no great skill, you must simply be careful and accurate with your measuring. A few low-cost tools and some shop-made devices aid straight boring and take most of the guesswork out of the job.

"Open-end" doweling, where the dowel is driven through the edge of

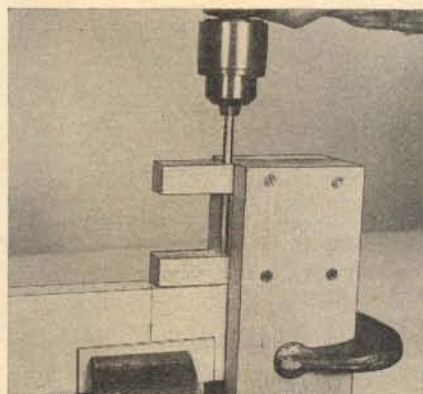
the wood to reinforce a joint is the easiest, most common method. It is used for assembling corners of screen and storm-window frames, and for making boxes and cabinets. The parts to be joined are clamped together, as the chair leg in Figs. 11 and 12, then holes the exact diameter of the dowels are drilled through one part and deep into the second. Glue is brushed in the holes and on the dowel, then it is tapped into the hole with a mallet. The dowel end should be rounded to prevent binding, and if spiral-groove dowel pins, Fig. 12, are not used, saw a groove, Fig. 8, or file a flat on the dowel so that air and excess glue can escape. Position the dowel holes at the center of the stock when possible to assure maximum strength.

"Blind" doweling, Figs. 1, 2, 3 and 7 can be done accurately with a dowel jig, such as the Stanley No. 59 that sells for about \$6.50. The jig is adjusted to the thickness of the wood and to locate the dowel hole. It then is locked in position and can be moved to another position to guide the drill so all holes line up, Fig. 1. Another method, not quite as accurate, is to use small metal plugs that are fitted with sharp points, Fig. 10. When the plugs are placed in drilled holes and the joint members are brought together, the points mark the hole locations in the other member.

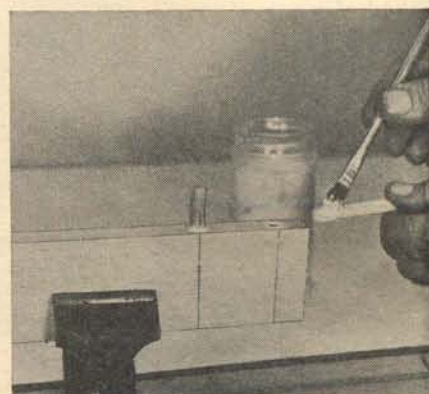
A lathe, drill press or other tool where a jig can be set up also can be used for accurate dowel alignment. When blind doweling, position the members together and mark



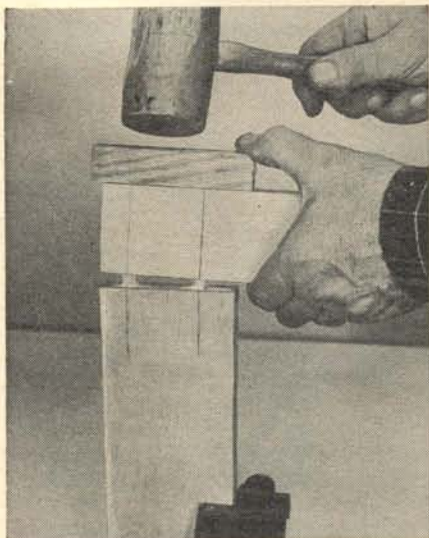
4. Mark dowel locations accurately, run lines over edge of stock to meet marks that indicate the centers of edges.



5. Shop-made doweling jig fits one thickness of stock, but several can be made to fit stock sizes often used.

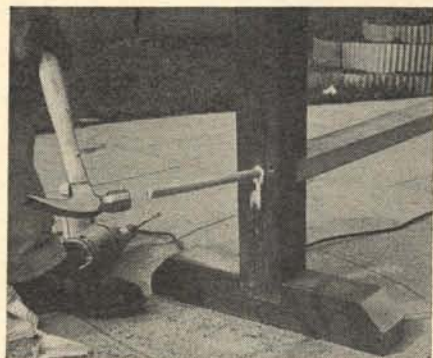


6. Glue is brushed into the holes and also on the dowels. Glue is lubricant for dowels that fit tightly in holes.

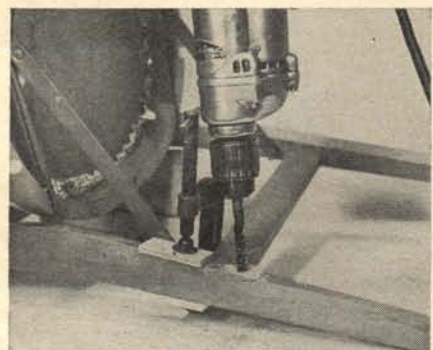


7. Despite tight fit, dowels should not require forcing. Use spiral-groove pins, or cut groove in dowels used.

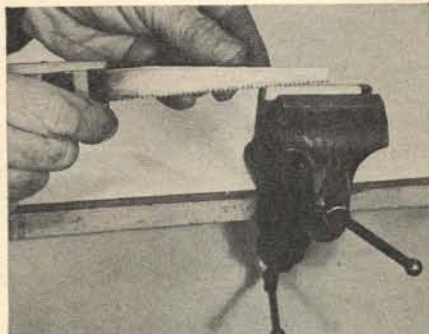
lines across both pieces. Separate the pieces and mark on the edges, Fig. 4. Then locate the dowel jig on the marked lines. A shop-made jig, Fig. 5, consists of two pieces of hardwood that hold two "pennant" strips. The latter strips are drilled together to assure accurate alignment and the jig is assembled with a length of dowel in the holes to maintain the alignment. The strips



9. Large-diameter dowels are fine for reinforcing heavy construction, hold better than screws in end grain.



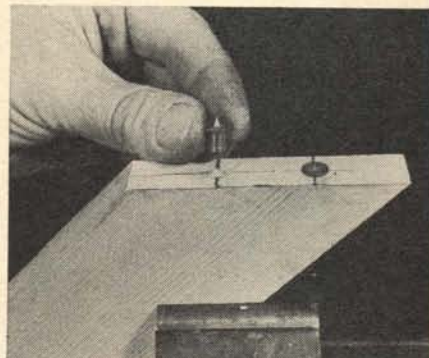
11. Doweling is valuable aid in furniture repair. Split leg of folding chair is drilled to accept dowels.



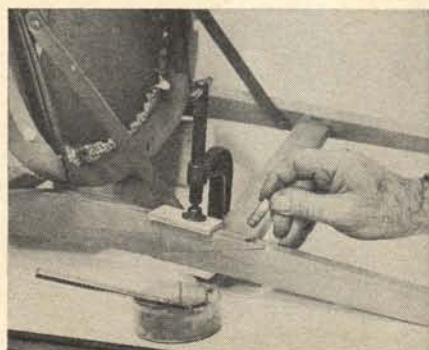
8. Slot sawed in dowel permits excess glue and air to escape. Flat filed on side of dowel pin does the same.

are of the thickness of wood to be doweled, and a separate jig is required for each thickness of wood and size of drill. Keep the same side of any jig on the same surface of the stock so that any slight misalignment of the jig will cause no problem; the surfaces of the assembled members will be flush. Hold both members firmly, Figs. 6 and 7 when assembling a doweled joint and use a mallet and protective strip when tapping the members together.

Doweling is excellent for heavy construction, Fig. 9, as the dowels hold better—especially in end grain—than nails or screws and expand and contract with the wood to maintain a tight joint. $\Delta \Delta$



10. Another method of locating dowel holes is to use pins that fit in one hole, mark location in other member.



12. Spiral-cut dowel pins are used to repair chair. After the glue dries, projecting ends are cut off, sanded.

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GEORGIAN WING CHAIR

(Circa 1750)

LESTER MARGON



can be purchased, which will eliminate the rather considerable task of making it. Legs of a shape that will closely approximate those shown on the chair also can be purchased ready-made. Advanced craftsmen may prefer to make their own. In that case, a pattern is made by enlarging the squared drawing. The silhouette of the leg is the same from both the front and the side. Hardwood is used throughout, although none of it need be finished, except for the lower portion of the rear legs that shows below the upholstery.

Making the spool that supports the arm may present a problem. To make it, first turn a cone, as shown in the large drawing, then cut the large end at an angle of 6 deg. Do not cut the small end until the chair arm has been "dry-fitted" together. Fit the spool in place and mark its length and the positions of the notch and flat. Cut the flat and notch and glue and screw it in place at that time.

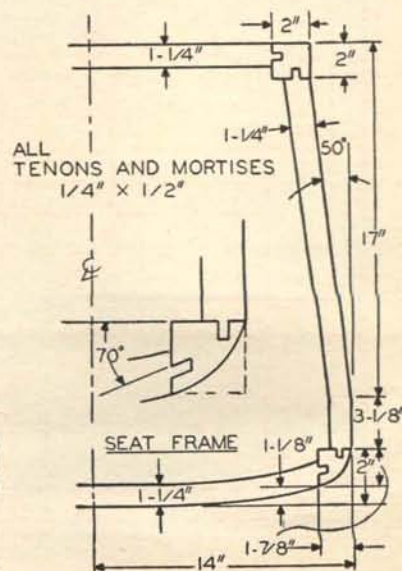
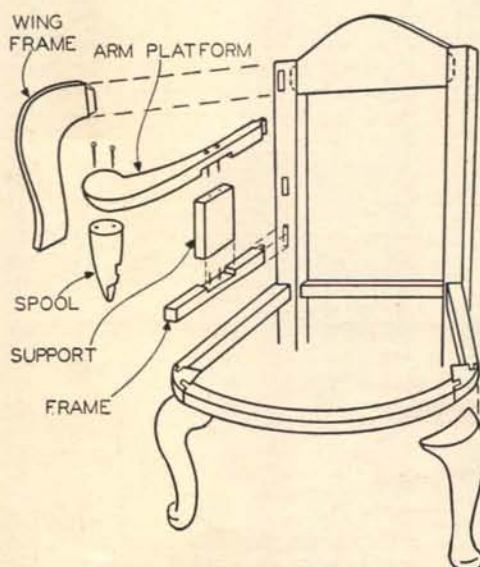
Start the assembly, after cutting all pieces to shape, by gluing together the back legs, the top slat and the lower slat (which also is the back of the seat frame). Next,

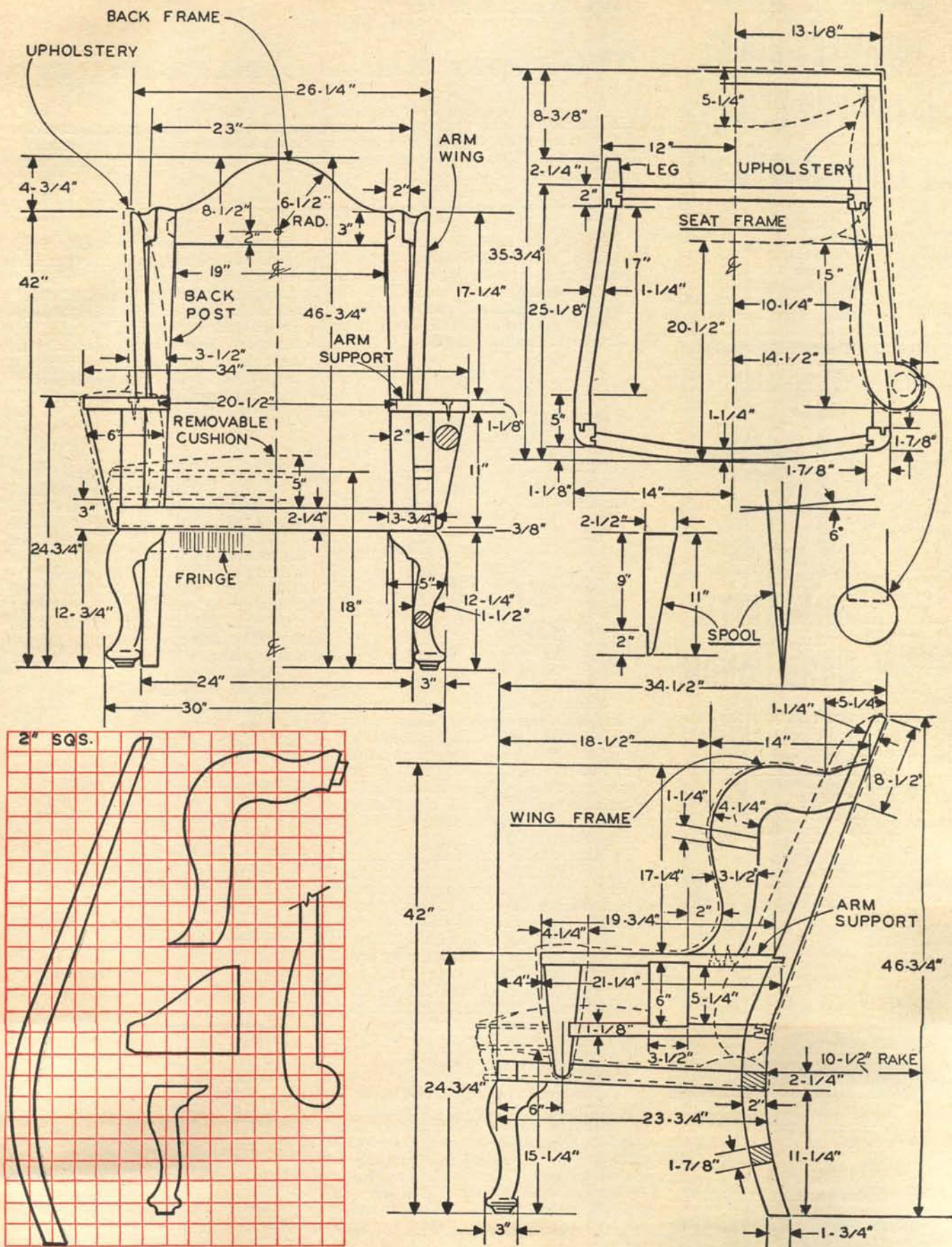
fit together the front and sides of the seat frame, using corner blocks at the two front corners. This assembly then is fitted to the back legs by means of a mortise and tenon (or dowel), joint on the free ends of the side members. The front legs can be attached to the seat-frame assembly before or after this step. The spool, arm support and the vertical and horizontal framing members of the arm assembly are now glued and screwed in place. The wing frame then is glued and screwed into position. Some craftsmen may wish a doweled joint here also, for added strength. The front legs and the lower portion of the rear legs now are sanded and finished.

Upholstery is the final step. Instructions in the upholstering article in this issue will give you the basics in this job. On this wing chair webbing, springs and padding are used in the back, the wings and inside the arms. The tops of the arms are simply padded. The curved shape of the chair is produced by tying the springs as indicated in the upholstering article; one edge of the springs are pulled down with the twine that is tied tightly. $\Delta \Delta$

Through the courtesy of the Curator of Art of the Henry E. Huntington Library and Art Gallery, San Marino, California, we received special permission to select and sketch this magnificent Georgian Wing Chair. It is in the Upper Drawing Room in the museum, and was donated in 1944 by Mrs. Florence M. Quinn, who also donated funds to acquire and install the period panelling with which the furniture now is displayed.

We were not able to see through the upholstery, so the drawings indicate what we think to be the best method of framing, using modern furniture-construction techniques. The framing is quite simple and straightforward, the comfortable contours being produced by the springs and upholstery. (See the upholstering article elsewhere in this issue.) A foam-rubber or urethane pillow of T-shape to fit the chair



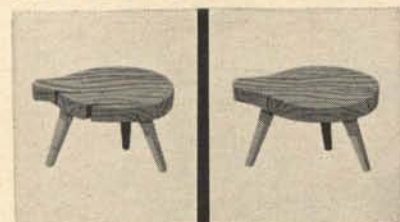


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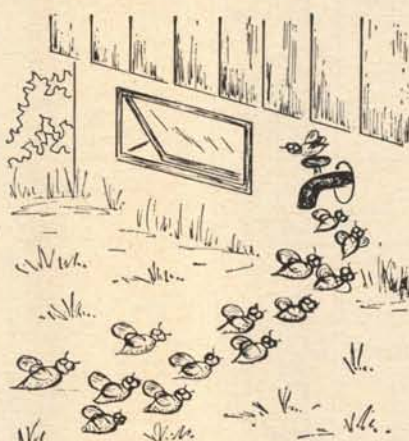
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Research Department

Each issue in this column we will choose questions on home and shop subjects from letters sent to us. Only those questions which have wide appeal will be answered here. Questions on specialized subjects will be answered by individual letter from the Research Editor's Desk.

I want to insulate some water pipes against cold weather, but I've heard that termites may enter the house through the insulation. Is there a special insulation to prevent this? If not, what is the solution?
 Mr. J. W., South Carolina



While you did not tell us where the pipes are, we must assume they are under the floor in the crawl space. If the pipes are easily reached, then one of the best insulating materials is a brush-on type of mastic which should be available either from or through your building-supply dealer.

Other types are equally efficient, those that slip on or are wrapped on, but the ease of application of these types depends to some extent on the location of the pipes.

Termites are not at all likely to gain entrance through any pipe insulation unless it is in direct contact with the ground in an area where semi or total darkness prevails throughout the day.

We have just purchased a home that is four years old, and there is Philippine mahogany paneling in the living room. We washed these walls with a moist sponge, dipped in warm water and mild detergent and have the wood clean and quite light in color. The wood looks and feels quite dry. What kind of finish can I apply to correct the dry condition that will also maintain the light color of the wood?
 Mr. A. S. B., Rhode Island.

If you are sure the wood is Philippine mahogany and not genuine mahogany, then paste furniture wax is the only finish we could recommend. Any new finish you apply will tend to darken the wood by changing the reflective qualities of the surface. Paste wax rubbed to a satin sheen will change the color less than any other type of finish.

We have a pine sideboard about 60 years old that never had a finish on it, and has simply darkened with age. I plan to have the item repaired and given an oil finish. In the meantime I would like to use it in my dining room with maple furniture. What can I apply to the pine to make the sideboard look better so I can use it, but which could easily be removed for applying a more permanent finish later? Would an oil finish do?
 Mr. H. B. R., Florida.

Anything you put on the wood now other than a professional finish must be removed in order to achieve a professional finish later. Oil, properly applied with the correct materials (not ordinary linseed oil) is a finish in itself. Wood cannot be stained after it is oil-finished, as the oil, properly applied, builds a film beneath the surface of the wood and the stain will not penetrate. Better leave the piece alone until it is given a professional finish.

For many of my projects made of hardwood I buy softwood molding and stain it to match. But, isn't there a commercial source for hardwood molding?
 R. J., Phoenix, Ariz.

Several of our advertisers sell hardwood molding. One with a fine selection of shapes in African mahogany, Cherry and Walnut is Nu-Craft, Inc., Milwaukee, Wis. For a catalog of the available molding write to Craft Patterns, Elmhurst, Ill., and ask for the Hardwood Moldings catalog.



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CRAFT PRODUCTS, ELMHURST 7, ILL.

TV-Commercial "Eliminator"

Continued from Page 43

phenol connector by removing the setscrew from the body. Insert the free end of the control wire into the large end of the spring and pull it through. Strip back 1 in. of the outer plastic insulation and twist the shielding wires together. Strip the insulation back from the center wire to within about 1/8 in. of the shield, as shown in Fig. 4.

Insert the spring with the wire inside into the connector body. Feed the center wire through the small hole in the threaded end of the connector. Now, turn the body of the connector until you can see the twisted shield wire through the setscrew hole. Replace the setscrew and turn it firmly to bear against the shield wire. Finally, solder the center wire in the hole in the connector and cut off the excess wire as close to the connector as possible. Screw on the Amphenol switch and replace the back on the set.

The Commercial Eliminator now is complete. Turn on the television, adjust the volume to your liking, and wait for the first unwanted commercial. Press the switch, Fig. 5, and there will be silence until it is released.

Parts List

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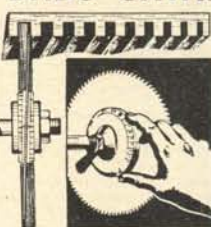
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Gem Cutting

Continued from page 28

passes through the frame. Fig. 7 shows a homemade saw table having a screw feed. This table differs in construction from the improvised version detailed in Fig. 9. A work vise also is detailed in Fig. 9. The inner thumbscrew compresses the jaw, the other one serves as a wedge so a firm grip at various angles is assured.

If you want to experiment with tumbling, a battery of four glass pint jars, Fig. 11, will serve the purpose. Each tumbler will hold from 25 to 50 average-size gem stones plus the abrasive. Rubber gaskets in the jar caps prevent leakage of water used to give the charge a muddy consistency for good coverage and easy movement. Adding a few drops of detergent prevents frothing. Small steel screws, (about one-fourth the volume of the charge), added to the 100-grit silicon-carbide powder used in the first cycle, will reduce tumbling time of this cycle by 15 to 20 per cent. For the following three cycles, use 220 and 600-grit silicon-carbide powder, and then tin oxide, each in a separate tumbler. The last cycle of polishing may require as long as 150 hrs. of continuous tumbling, as compared to about 50 hrs. for the other cycles. $\Delta \Delta$

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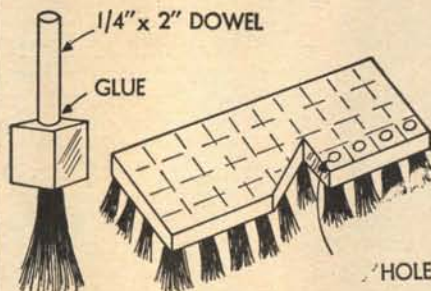
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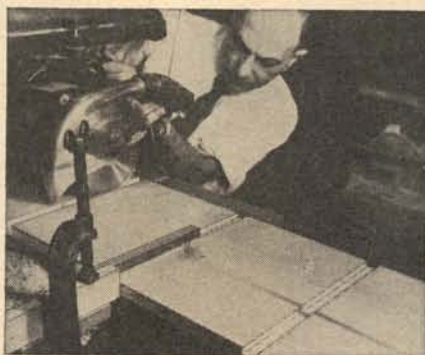
Glue Brushes



Make low-cost, disposable glue brushes by sawing a fine-bristle scrub brush into sections. Mark the back of the brush as indicated, so that a tuft is located inside each square. Drill a 1/4-in. hole 1/4 in. deep in the center of each square, then saw the squares apart. Glue a 2-in. length of 1/4-in. dowel in each to complete each brush.

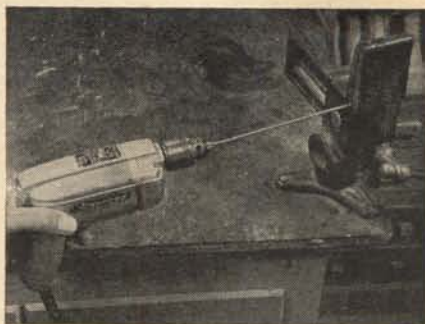
Daniel Bousha, Jackson, Mich.

Making Duplicate Dadoes



When sawing equally-spaced dadoes for book shelves or cabinets, the dadoes must be accurately matched in facing pieces so the shelves will be level. A simple jig on a radial-arm saw will lick the problem. Make the first cut any desired distance from the ends of both boards. Then, move one board to the desired position and make the second cut. Without moving the board fit a strip of wood in the first groove and clamp a block of wood against the saw fence so it is against the strip. Now, remove the strip, put the other board on the saw and fit the strip in the groove. When the strip is forced against the block, make the cut. This operation can be repeated as often as necessary to make accurately matched dadoes.

Fast Wire Twisting

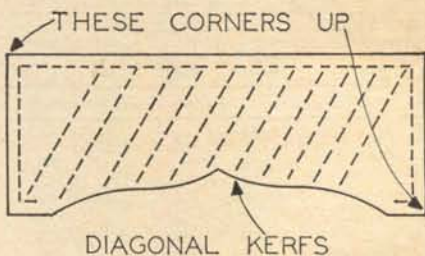


Hobbyists who make jewelry, and other craftsmen who need to twist wire strands can do the job quickly and uniformly with an electric drill motor. Cut two strands of uniform length, grip one end of each in a vise, chuck the other ends in the drill. Flick the switch and let the tool do the work.
De Cristoforo, Calif.

Number "Stencils"

When I need neat numbers for a shop project I take them from a large calendar. Pasted on heavy paper they are easy to transfer to a surface with carbon paper. When the numbers wear out there are always outdated pages from the same calendar for a fresh supply.
Thomas Vallana, New Derry, Pa.

Straightening Trim



One of the trim boards on a small home desk that had been stored in the basement for some time developed a severe wind (twisted warp). Because the board was shaped, rabbeted and sawed in a design I knew it would be easier to straighten it than making a new one. My solution was to saw several diagonal kerfs to within about 3/16 in. of the face. These kerfs were positioned so that closing them straightened the board. Small finishing nails were used to hold the glued kerfs.

C. Kimbrough, Cleveland, Ohio.

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Reupholstering

Continued from page 34

crosses a spring or other twine, Fig. 18. Tying a clove hitch is shown in Fig. 24. Avoid slack in cross twines, and avoid pulling the springs out of position. More durable ties and flatter spring surfaces can be produced by "return tying", Figs. 25 and 26. Two tacks are used at each fastening point on the rails. Often springs have a wire edge, Figs. 27 and 28. If this has loosened from the springs, refasten securely with metal clips squeezed on with pliers.

After retying springs, cover them with heavy-weight burlap. Slip-tack this temporarily at the rails so it is taut over the springs. Stitch the burlap to the springs at three points on each spring, Fig. 29, locking each stitch. Then, remove the tacks and retack the burlap permanently, leaving it slightly slack. Often seats require an edge roll along the rails to the edges of the springs. These are made separately of tow sewed in burlap. If you find an edge roll when stripping a seat, it probably can be reused. Remember where and how it is attached.

Padding for tight-spring chair seats generally consist of a layer of tow, preferably stitched to the burlap but not to the springs. Over this you apply a layer of hair or moss, then a layer of cotton and a muslin cover. The final fabric covering goes over this. Foam rubber is being used extensively for padding in furniture. When using this, the edges often must be cut at a bevel to avoid ridges showing through the fabric. It comes in various thicknesses and densities. Several pieces can be cemented together to make padding.

When it is necessary or desirable to replace old coil springs, you can substitute sagless flat springs. These are lengths of spring wire bent to a zig-zag shape. They are fastened to front and rear rails of seats, and the top and bottom rails of the back. They may be held together crosswise with small coil springs. Sagless springs are arranged to arc at predetermined distances from the top edge of rails. The ends are fastened to the rails with metal clips nailed to them. These permit the springs to pivot slightly. Resiliency of these springs vary with the arc, and with the thickness of the wire. Springs of 8 to 11 gauge are used for seats, springs of 10½ to 12½ gauge are used for the backs, Fig. 30.

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By Grant Mauk

First, let me introduce myself. I'm president of an Internationally famous company. Our name is known to millions throughout the U.S., Canada, Europe, South America, even in Africa. It has become famous partly through National advertising, but principally through the services given by men we have put into business for themselves under our Co-operative Plan.

These men were drawn from all walks of life. They were farmers, mechanics, truckers. They were office workers, retail clerks, house-to-house salesmen. They were professional men, railroad men, college graduates, teachers. Some had had only a grade school education.

They were young men who had worked for others for a few years; men retired or just about to retire; men of middle age who had family responsibilities. For years they had yearned to start independent businesses. But they didn't dare risk giving up their jobs and missing their pay checks—even for a few weeks. We showed them how to start their own businesses in spare time. Then, when their spare time profits approached or equalled their regular pay, they could quit their jobs with safety and give all their time to building their businesses still bigger.

Today, throughout the world there are many hundreds of such men that my company has put in business. They own their businesses outright. They are their own bosses. They "call the shots" on vacations, hours of work, hours of play and recreation.

Some of them run "one man" businesses. Based on the rates in our National Price Guide, they can make \$9.00 gross profit an hour on servicing they do themselves. A gross income of \$10,000 and upwards the first year is not too much to expect from a one unit operation—with no shop, no store, no rent, no inventory, and no equipment except that which we furnish.

Ward Whitbeck wrote "I have made as much as \$225 in one day." L. Lawson says: "In September, working alone, jobs totaled \$1,475.00." L. Canaday wrote: "\$1,571.00 in a single month." And G. Byers reported, "On one institutional job my charge was \$2,416.00—total expenses, \$814.00."

Other men have built organizations with from two to five men working for them. The owner merely writes up the orders, keeps the books, and does the banking. This increases the profit opportunity as the owner can make \$6.00 an hour on every hour his employees work—even after paying them a good hourly wage. Ed Kramsky wrote, "In my second year I now have two assistants, a nice home, and real security for my family." E.

Davis reported "Gross income increased \$17,660 this year." Carl Smith wrote, "Earned \$650.00 in one week. Our volume is getting bigger all the time." And Michael Lyons made the statement, "First calendar year \$40,000 gross income. Without headquarters constant help it would never have been possible."

What is this booming business? What does it take to get into it? Let me answer: We train, equip, and help finance men in one of the fastest growing service businesses known. We provide them with a Franchise which permits them to operate under our trade name—under our International Trade Marks, and our copyrights—using our methods, and our sales program. Each man benefits from a big national advertising campaign.

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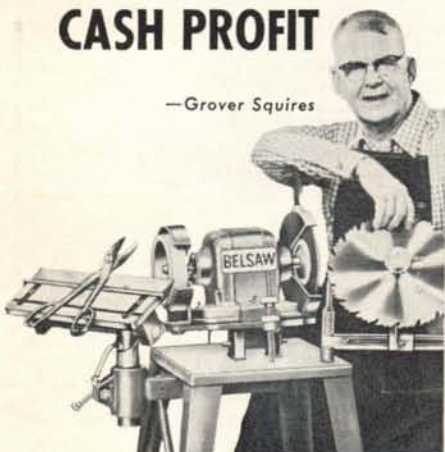
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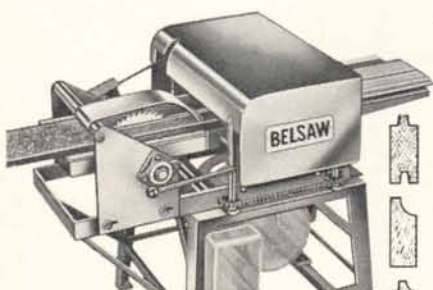
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WE'LL EVEN HELP FINANCE YOU!**

The multi-million dollar Rubber Stamp Business—once controlled by a few big companies—is now being taken over by small home operators—one in each community throughout the U.S. Men and women who have this inexpensive machine can turn out huge quantities of Rubber Stamps with special wording that buyers once were forced to order from big cities. Material costing only 27¢ makes a stamp that sells for \$1.80. The machine that does the work is simple and easy to operate and it turns out as many as six Rubber Stamps at a time each with different wording such as names, addresses, notices, stock numbers, prices and other "copy" needed by offices, factories and individuals. Working full capacity, it can earn as much as \$9.20 an hour for the operator! Now you can get into the big-pay business yourself, with your own home as headquarters. You don't need any experience. We supply everything, including complete instructions and eight ways to get business coming in fast. Start making up to \$9.20 an hour from the very beginning. Cash in on the profitable Rubber Stamp business right away.

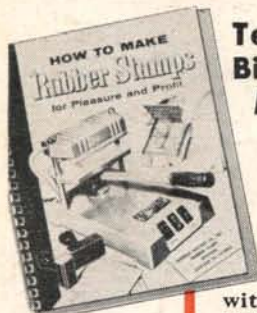


**WE HELP
FINANCE YOUR
START IN BUSINESS**

**TAKES UP
ONLY 2
SQUARE FEET
OF SPACE**

● Read the complete and fascinating Rubber Stamp-story in a big 110-page Book. Learn how we even help finance your start. The Book is profusely illustrated with more than 100 pictures and photographs. And you can read it for a full two weeks without risking a penny of your own money!

NEW WARNER SUCCESS PLAN



**110 PAGES
MORE THAN 100
PICTURES**

**Now Ready to Mail
Tell Me Where to
Send Your Copy**

See

COUPON

**Tells How to Build — Step by Step — to
Big Profits and Personal Independence
Read This Plan for Two Weeks
ENTIRELY AT MY RISK!**

In this amazing Plan you will find exact and detailed instructions for starting a Home Business in spare time—without giving up your present job and without risking the loss of a single pay check. The Warner Plan shows you—with pictures, photographs and drawings—just how to make Rubber Stamps just as good as those turned out by the big companies. It shows how to get orders without canvassing or house-to-house selling. It shows you how to expand, how to get others to work for you and how to be SURE of at least twice the money you make on your present job for a life of personal independence.

But don't make any decision now. Read the Plan first—entirely at my risk. Then—after you have made a careful investigation—after you have talked things over with your family—only then do you decide what you want to do.

The thing to do now is to get full details which I'll send you FREE. No salesman will call to urge you to buy anything. Mail coupon today—or just send a postcard—and I'll see that complete information goes out to you by return mail—postpaid.

**RUBBER STAMP DIVISION, Dept. R-6-K
1512 Jarvis Avenue, Chicago 26, Illinois**

**RUBBER STAMP DIVISION, Dept. R-6-K
1512 Jarvis Avenue, Chicago 26, Illinois**

Send No Money

Please rush full particulars. Tell me about your financing plan and about the little machine that can get me started in the profitable Rubber Stamp Business at home in spare time. Everything you mail me is FREE. No salesman will call.

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

**Here's what the new
WARNER PLAN Tells You
about Making Money
with RUBBER STAMPS**

1. HOW TO have fun *now* and at the same time provide for a secure and prosperous *future*.
2. HOW TO check the advantages of operating a Rubber Stamp Business in your own community.
3. HOW TO acquire a general knowledge of the business based on a brief history of the Rubber Stamp.
4. HOW TO visualize the scope of the Rubber Stamp market.
5. HOW TO make a Rubber Stamp (general outline).
6. HOW TO assess the value of Warner Equipment.
7. HOW TO get acquainted with the "Tools of your Trade."
8. HOW TO make a Rubber Stamp (Specific procedure).
9. HOW TO mount a vulcanized Rubber Stamp.
10. HOW TO make "Special" Rubber Stamps.
11. HOW TO cut plastic Matrix Board for the chase.
12. HOW TO get the right price for the Rubber stamps you make.
13. HOW TO price your complete Rubber Stamp Line.
14. HOW TO figure costs so you will be sure of a substantial profit on all the work you turn out.
15. HOW TO set up your workshop.
16. HOW TO get the most out of Warner's "Eight Tested Sources for Getting Business."
17. HOW TO operate at peak efficiency when YOU ARE YOUR OWN BOSS.
18. HOW TO get started on a cash outlay so small that you can get back your entire investment inside of two weeks.